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FISH AND WILDLIFE SERVICE, John L. Farley, *Director*

PINK SALMON TAGGING EXPERIMENTS IN ICY STRAIT AND UPPER CHATHAM STRAIT 1950

By Carl H. Elling and Paul T. Macy

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PINK SALMON TAGGING EXPERIMENTS IN ICY STRAIT AND UPPER CHATHAM STRAIT, 1950

By CARL H. ELLING and PAUL T. MACY, *Fishery Research Biologists*

Early in 1950 the United States Fish and Wildlife Service announced a new program designed to concentrate Alaska fishery research on the pink-salmon fishery of Southeastern Alaska. A series of tagging experiments at strategic points in the Alexander Archipelago was planned as part of this program. The purpose of these experiments was (1) to identify the racial composition of the runs of pink salmon (*Oncorhynchus gorbuscha*) in each of the major fishing areas of Southeastern Alaska during the course of the season, by tracing the fish from the point of tagging to the spawning streams, and (2) to gather all possible other data pertinent to rates of migration, routes of travel, and intensity of fishing.

Perpetuation of our salmon stocks at a commercially productive level depends on regulation of the catch so that enough salmon of each race reach their respective spawning grounds when water conditions are right for spawning. Once salmon have spawned successfully, development within the egg and growth of the fry after hatching depend on natural conditions over which man has little control. These conditions make it difficult to determine the direct relation between escapement (that is, those salmon successfully reaching spawning areas) and return (that is, those salmon surviving to enter the fishery 2 years later).

Regulation of the pink-salmon fishery in Southeastern Alaska is particularly complex because of the number of streams and the differing spawning times in the area. To provide the best distribution of spawners in as many streams as possible, a thorough knowledge of the spawning periods of the various races, their availability and movements, and the exploitation in the fishery is required. Tagging is one way by which the biologist may gain some information about the pink-salmon fishery in Southeastern Alaska.

Tagging experiments in Southeastern Alaska were inaugurated by Willis Rich and his associates in 1924. Through tagging and subsequent recovery of tagged fish by the commercial fishery, those investigators were able to define general routes of migration, and to some degree show the timing of various runs. Information from those programs found ready application in the management of the fishery.

In our recent experiments we have sought to supplement earlier tagging studies with specific data on racial composition and availability in the fishery. We have achieved this by extensive tagging over a 43-day period, followed by an equally extensive recovery program both in the fishery and on the spawning grounds.

We are particularly indebted to the Columbia River Packers Association for the use of their traps at Point Adolphus and Pleasant Island, to the Todd Packing Company for use of their Cube Point trap, and to the Superior Packing and P. E. Harris Companies for use of their False Bay traps. We are obliged to the many individuals who returned tags and who carefully noted the information on their recovery. The staff of the Fisheries Research Institute was especially helpful in making a number of stream recoveries. Our particular thanks go to the bookkeepers of the various canneries, who were frequently interrupted during their regular activities to record and make payment for tags. Without such valuable assistance the recovery program could not have attained the success that it did. We thank Elizabeth Vaughan for review of the statistics presented in this paper, and are indebted to the late R. F. Shuman for his helpful instruction and planning assistance during the early phases of the experiment. Others who contributed liberally to the review of this paper include Albert L. Tester, O. E. Sette, C. E. Atkinson, C. J. Burner, M. G. Hanavan, and R. P. Silliman.

AREA DESCRIPTION AND NATURE OF FISHERY

Southeastern Alaska is composed of a group of islands and a narrow mainland strip which together comprise an area approximately 400 miles

long and 125 miles wide. The streams on these islands and along the rugged mainland shore provide the spawning grounds for millions of pink salmon each year. The principal watercourses in the northern part of the area are Icy Strait, Chatham Strait, Tenakee Inlet, Peril Strait, Frederick Sound, Stephens Passage, and Lynn Canal (fig. 1). Through this extensive network of inland passageways the salmon migrate to reach their parent streams (figs. 2 and 3). Most of the fishery is centered in this series of waterways. A minor part of the catch is taken along the outlying westerly shores of Baranof and Chichagof Islands.

The pink salmon of this area can be broadly classified into three groups in accordance with the time they arrive on their spawning grounds: (1) The early runs, which appear in quantity during the latter part of July and early August, (2) the midseason runs, which reach their height in late August and early September, and (3) the late runs, which extend through September and into early October.

A number of streams along the mainland shore of Stephens Passage, some of those emptying into Seymour Canal, and several tributaries of Tenakee Inlet, are known from stream surveys to support most of the early-spawning pink salmon. Fishing regulations in 1948, 1949, and 1950 protected these early fish by delaying the opening day of the fishing season until mid-August. This allowed many of the early spawners to escape all or nearly all of the fishery and reach the spawning grounds.

The late opening date of fishing has placed the heaviest fishing on the midseason- and late-spawning salmon. These fish, with a few exceptions, are shown by stream surveys to be produced by streams in Chatham Strait, Frederick Sound, and Peril Strait, and the few streams on the western shores of Baranof and Chichagof Islands. The Icy Strait area supports races which are relatively early and others which appear throughout the balance of the season.

The two principal types of gear used in Southeastern Alaska are the fish trap and the purse seine. Nearly all traps are the floating type, constructed of a sturdy framework of native spruce logs. They are towed to locations before the beginning of each season and each trap is fastened in position by a series of anchors and a lead cable which runs from the shore to the outer face of the trap. If any part of the trap is in 100 feet or more of water at mean high tide, this "lead" must not exceed 900 feet in length. Chicken-wire mesh extends downward from the lead to a maximum depth of about 48 feet, forming a barrier to the passage of salmon moving along the shoreline. In attempting to find a way around this barrier, the salmon swim into a series of trap compartments known as the jigger, heart, pot, and spiller. A single tunnel, tapering from a wide to a comparatively narrow opening, leads into each of these compartments. During the weekend closure of 36 hours, the wire-mesh heart walls are dropped and the pot tunnel is closed to allow the fish to pass out around the lead and through the trap. Most traps have a small cabin that houses a watchman while the trap is in operation. At the end of each season the trap anchors are lifted, the lead cable is released, and the trap framework is towed to a sheltered bay or cove, where it is stored until it is needed in the following season.

The other principal gear type is the purse seine which has been in use for many years in the Alaska salmon fishery. Although seine boats have gone through considerable development since the early days of the fishery, keel length is limited to 50 feet by law. In addition to this, the present law states that a seine used in Southeastern Alaska must not exceed 250 fathoms in length or 19½ fathoms in depth, nor be less than 150 fathoms in length and 8½ fathoms in depth. The standard mesh size in use is a 3½-inch stretch measure webbing.

TAGGING EQUIPMENT AND PROCEDURE

Metal strap tags, commonly used in all early salmon-tagging experiments in Southeastern Alaska (Rounsefell and Kask 1945), were easily applied to the fish but were not always easily detected, particularly in streams. To facilitate stream recovery of tagged salmon, we used the Petersen-disk-type tag, now almost universally used for tagging salmon. The two white plastic disks, $\frac{5}{16}$-inch in diameter, were attached one on each side of the fish by a 2-inch nickel pin inserted through the fleshy part of the back just below the dorsal fin.

In preparation for the tagging work, we constructed several tagging boxes like those developed and used by R. F. Shuman and P. R. Nelson in their investigations on the Karluk River, Kodiak

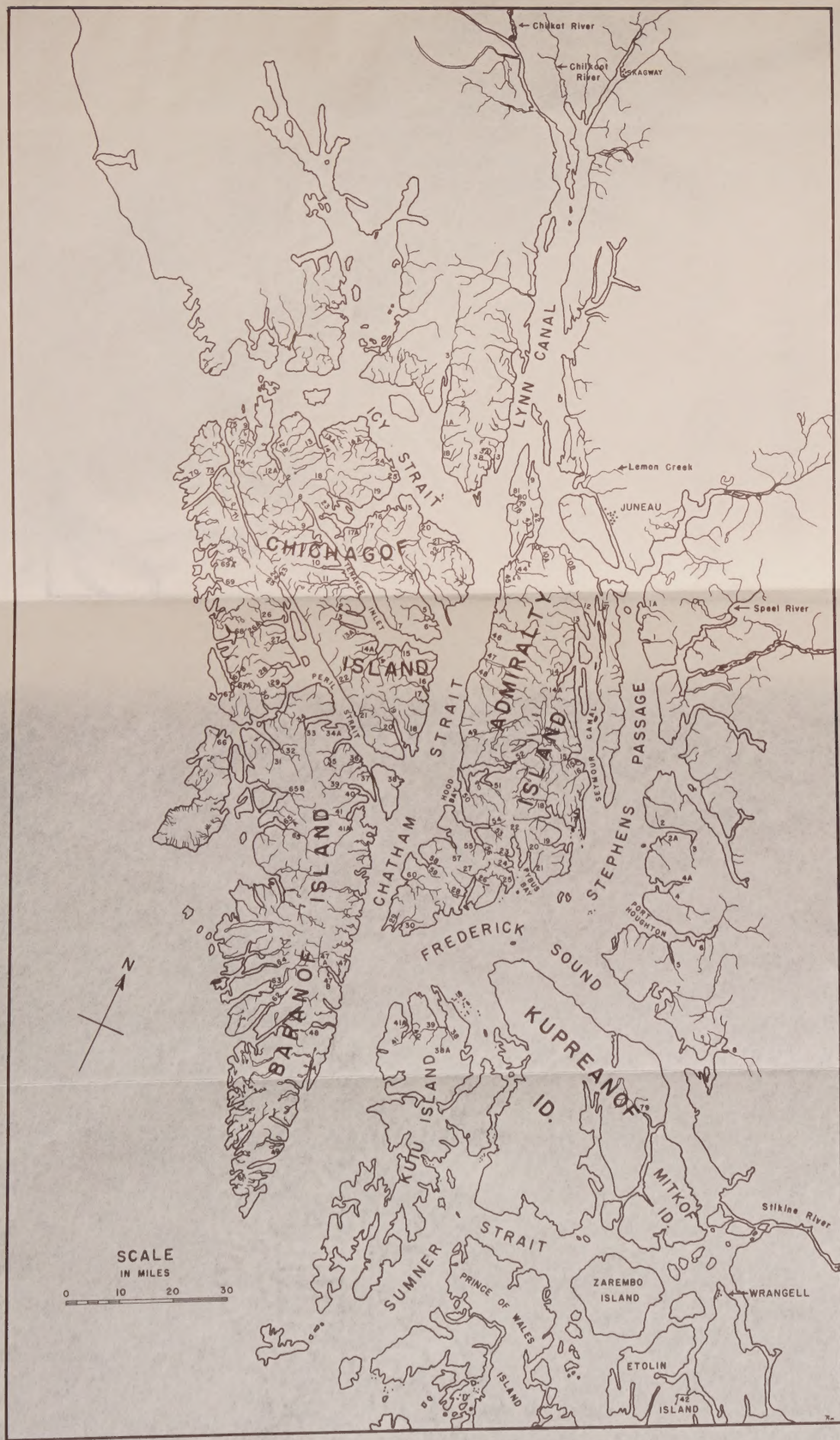

FIGURE 1.—Stream reference map of northern section of Southeastern Alaska.

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PHENS
PASSAGE

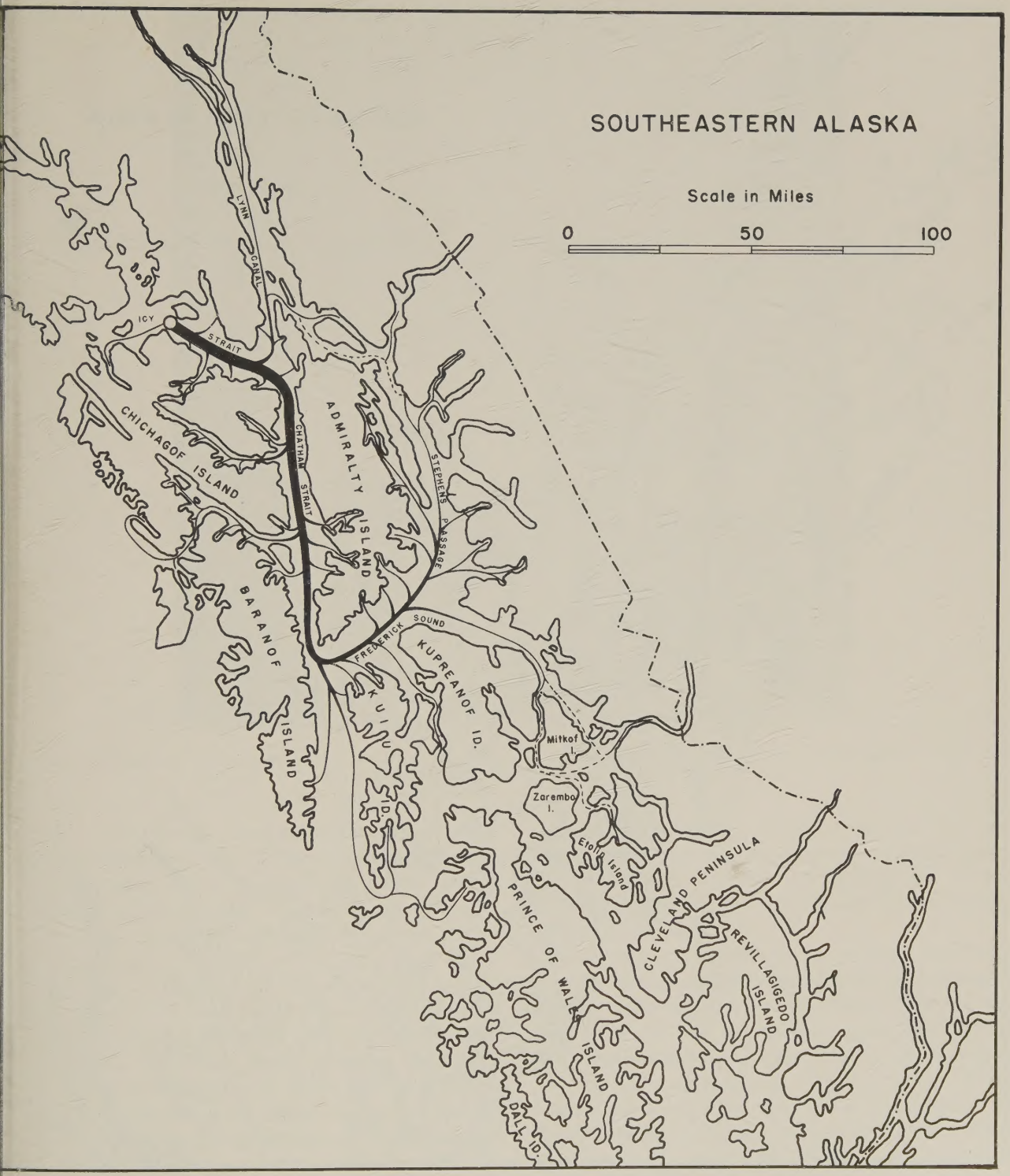

FIGURE 2.—Distribution of pink salmon tagged in Icy Strait, 1950, as indicated by commercial and stream tag recoveries.

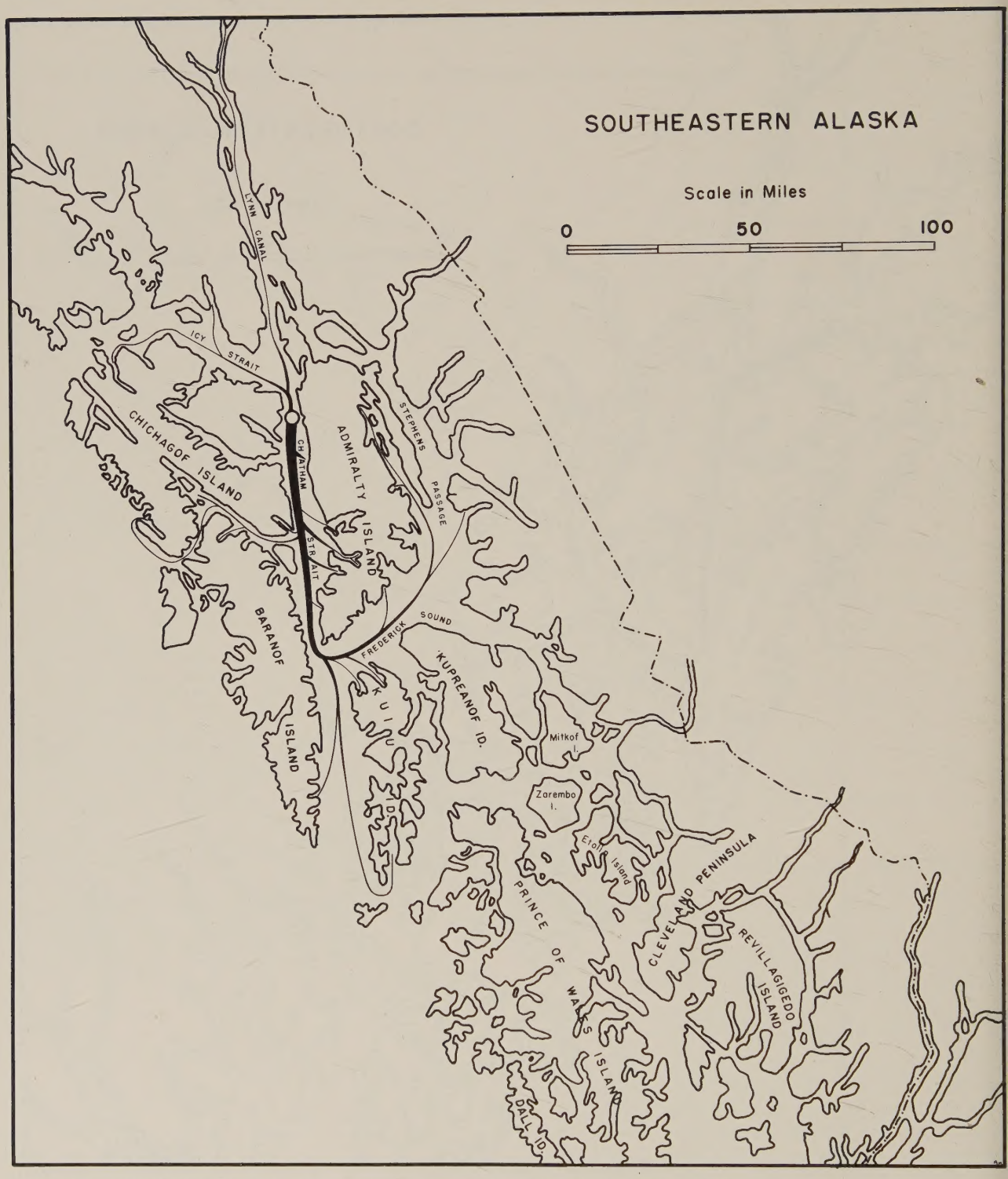

FIGURE 3.—Distribution of pink salmon tagged in Upper Chatham Strait, 1950, as indicated by commercial and stream tag recoveries.

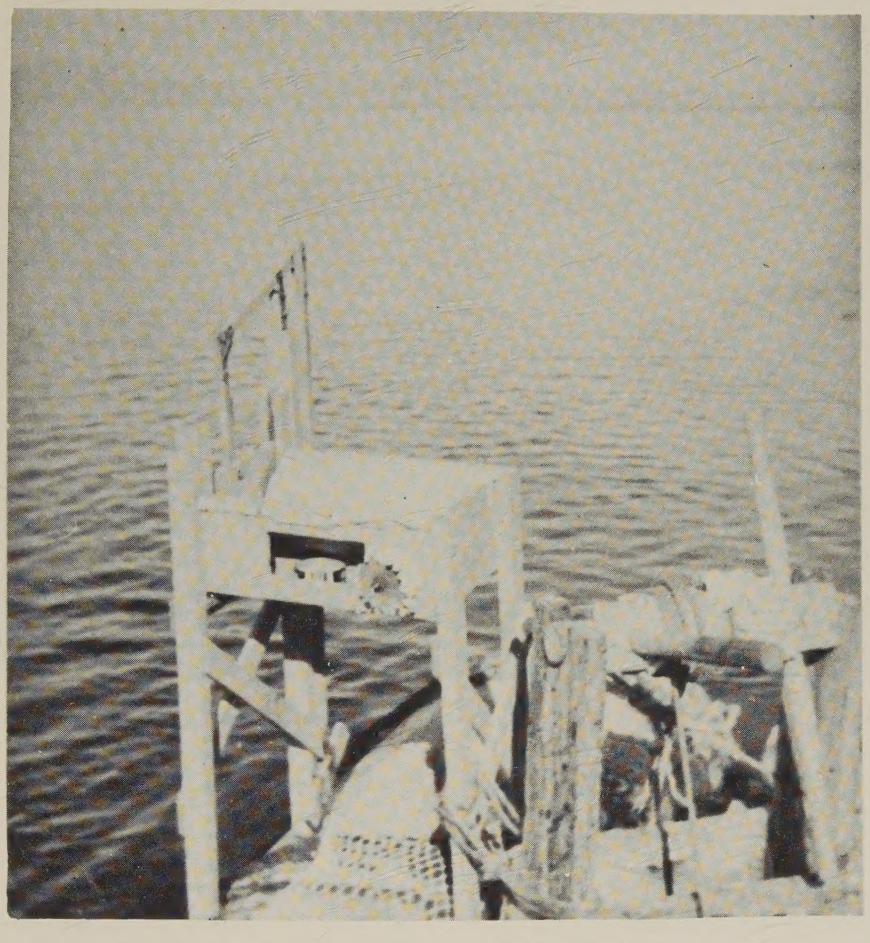

FIGURE 4.—Tagging box in position on head log of fish trap. Note tags and pins inserted in purse-seine cork. The metal container in box opening holds unnumbered disks.

Island. The simple mechanical features incorporated in the box (fig. 4) made it ideal for our use in tagging from floating fish traps. It is essentially a rectangular cradle, 24 by 15 by 8 inches, with V-shaped side walls mounted on 4-foot legs so that the fish are at waist-high level for tagging. The inner walls are lined with padding covered with heavy canvas to afford adequate protection against excessive bruising of the fish in handling. A sliding door, operated by a foot lever, opens at the outer end of the box to facilitate a quick, harmless release of the tagged fish. The tagger's side of the box is equipped with a rotating cork in which 100 pins with serially numbered disks are inserted. A pin is plucked from the cork as each successive fish is tagged. A convenient container, placed in a slot on the side of the box, holds unnumbered disks. The tagger generally puts 20 or so of these disks in his mouth, picking them one at a time from his lips and placing them on the pin as it is inserted through the fish. After 100 fish are tagged, the empty cork is replaced by one containing the next series of numbered disks.

Each day, preparatory to tagging, our crews pursed the trap spiller webs, confining the captured salmon to a narrow area at the head log of the fish trap (fig. 5). If the spiller contained several thousand salmon, care was taken to avoid crowding the fish excessively. Despite these efforts some smothering did occur. In this respect we found that pink salmon could stand far more abuse than could the other four species of salmon taken in the traps.

After the spiller web was pursed, we set the tagging boxes on the head log of the fish trap and arranged the tag series to be used for the day. By this time the trapped salmon had quieted

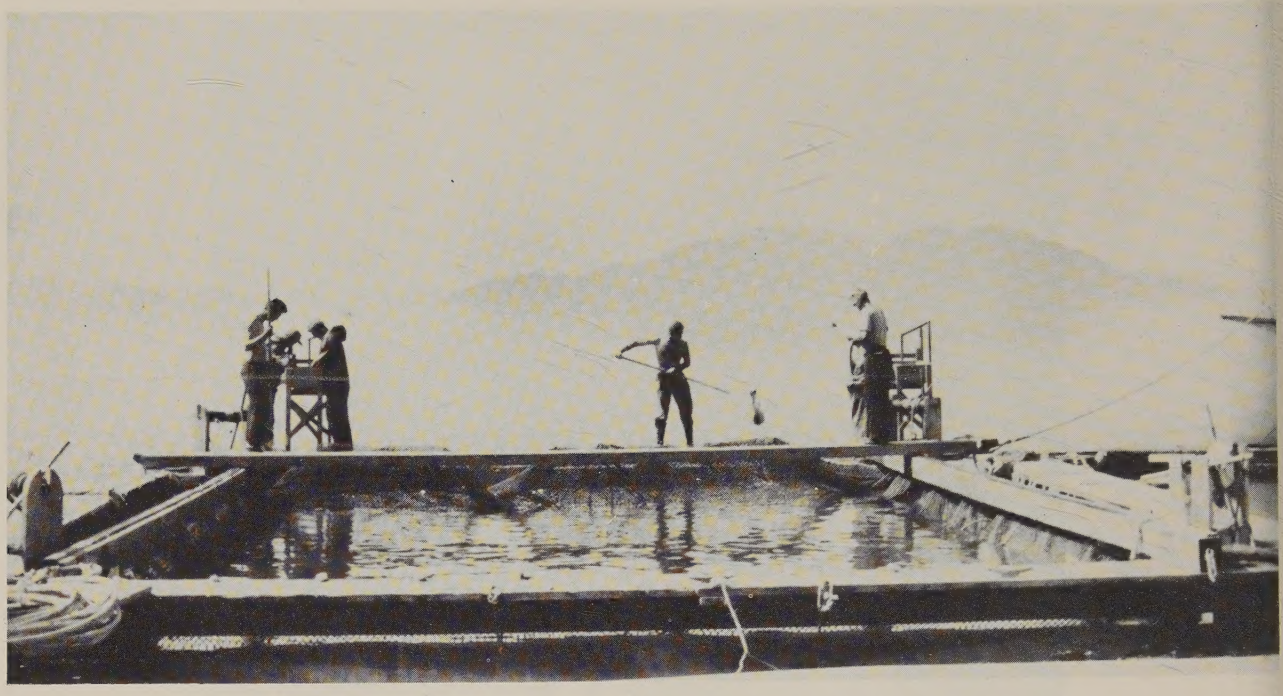

FIGURE 5.—Ideal tagging conditions at Point Adolphus, Alaska. Trap spiller has been lifted to confine fish in restricted area at head log of trap.

down enough to permit moderate handling of the fish while tagging.

Each of our tagging teams was composed of three men. One man dipped the fish from the trap spiller into the tagging box, placing the head of the salmon toward the outer end of the box. Another held the fish firmly in position with the dorsal side up by placing one hand over the head and the other around the caudal peduncle. Using long-nosed pliers, the tagger forced the nickel pin, strung with a numbered disk, through the fish, placing a blank tie-in disk on the opposing side. He then clipped off all but about ¾ inch of the pin and bent this remaining portion in circular fashion over the hole in the blank disk, taking care to fit the tag firmly but not too tightly. His assistant then opened the box door and released the fish into the open water. The whole operation was completed in less than a minute. Under favorable conditions, each team could tag from 800 to 1,000 fish a day.

TAGGING

Icy Strait

Two tagging sites, approximately 8 miles apart, were selected about midway in Icy Strait, one on each side of the channel (fig. 6). Our purpose here was to determine whether pink salmon in this area exhibited similar migratory patterns when tagged on opposite shorelines, to detect random movements between the two locations, and to give us a duplicate check on the movements of all fish tagged in this locality. The sites were picked for their proximity to the open ocean and their desirability as "calm water" tagging points. Several traps further west were avoided because of their exposure to ocean disturbances. As it was our desire to tag as continuously as possible, the locations selected were those that we felt would assure a reasonably uninterrupted operation.

The 1950 Icy Strait taggings differed from former experiments in Southeastern Alaska in that they were initiated fully 3 weeks before the start of the general commercial fishing season. Tagging commenced on July 25 at Point Adolphus trap No. 4 of the Columbia River Packers Association. Two days later our second crew began tagging at that company's Pleasant Island trap No. 2. Tagging progressed daily through August 14, the day before the opening of the commercial fishing season. During this time, 14,534 pink salmon were tagged—approximately all the pink salmon entering these two traps.

During the fishing season, tagging was con-

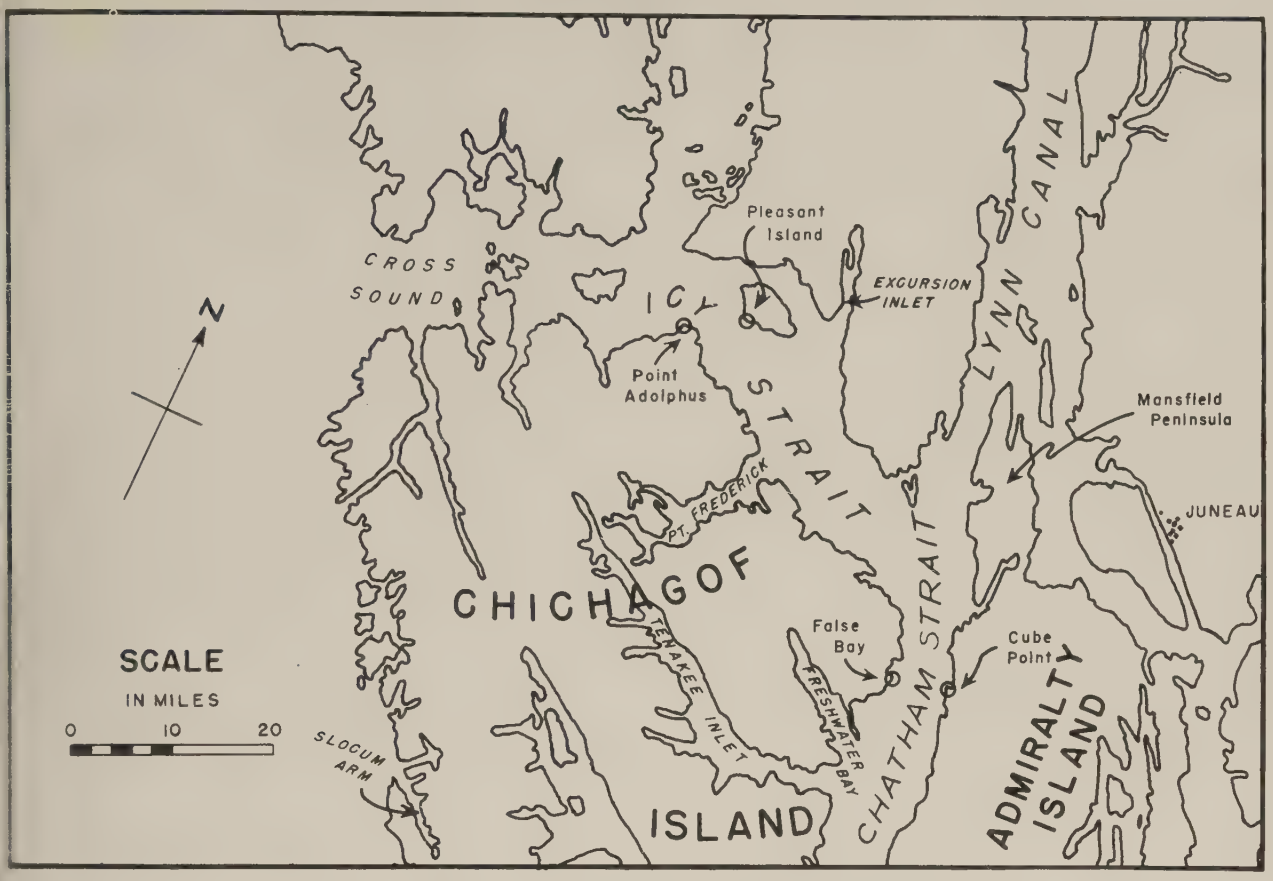

FIGURE 6.—Tagging locations in Icy Strait and Upper Chatham Strait.

ducted at Pleasant Island on August 27 and 30 and September 5 and at Point Adolphus on September 4. The total number of pink salmon tagged during these experiments was 1,061.

In all, 15,595 pink salmon were tagged in Icy Strait in the 43 days from July 25 to September 5.

Upper Chatham Strait

Tagging experiments in Upper Chatham Strait during the weekly closed periods of the regular fishing season included releases at the Todd Packing Company's Cube Point trap on August 20 and September 3, at the Superior Packing Company's False Bay trap on August 21, and at P. E. Harris's False Bay trap on September 3. Most of the 1,805 pinks tagged at these traps were taken at the Cube Point location on August 20.

COMMERCIAL RECOVERIES

Recovery effort

Before considering the returns within the commercial fishery, it is important to discuss in some detail the fishing effort which was instrumental in effecting the recovery of these tags. The length of season and the amount and distribution of gear brought into play are especially important in assessing the value of returns made from a particular tagging experiment.

Almost the entire commercial recovery[1] of tagged salmon began with the start of the general season at 6 a. m. on August 15. The few tags taken by trollers and gill netters before this date are negligible in relation to the total return. The fishing season continued until 6 p. m., September 2, with the usual 36-hour weekend closures. A 3-day extension was subsequently granted for the period of 6 a. m., September 7, to 6 p. m., September 9. The total fishing time was 432 hours.

Complete data on the quantity of mobile gear operated in this area and the time it was fished are lacking, but we do have figures on the number of traps used in each area. Since they were instrumental in making the majority of recoveries, their distribution by areas is given to indicate

[1] Commercial recoveries are those made in salt water, in contrast to stream recoveries, which are those made within stream channels.

the intensity of fishing effort in the various localities in which tags were recovered:

	Number of traps
Icy Strait	17
Lynn Canal	2
Upper Chatham Strait	31
Lower Chatham Strait	5
Frederick Sound	18
Stephens Passage [1]	0

[1] No traps were permitted in Stephens Passage during the 1950 season, nor were purse-seine vessels allowed to operate on the mainland shore of this area.

As the 1950 run of pink salmon in Icy Strait was one of the smallest on record, the daily volume of pinks entering the traps at which we were operating was never more than we could handle. Consequently, almost every pink salmon captured in these traps during our experiments was tagged, and a rather large number of tagged salmon were distributed in a relatively meager catch. We believe the combination of these two factors resulted in an unusually complete recovery. Had a similar number of tags been distributed in a large catch, the possibility of tags being overlooked probably would have been greater.

To effect the return of tags, a 50-cent reward was offered for each recovery with information pertinent to its capture. Placards announcing the tagging program and the reward for the return of tags with capture information were posted at strategic points in the fishing area. Information desired with the tag returns included date of capture, location, and type of gear. Tag-return booklets providing for simple listing of the above data were distributed to canneries, fish buyers, fishermen, and others likely to encounter tagged salmon.

Since tags were to be recovered both in the commercial fishery and on the spawning grounds, the most practical means of achieving an effective return in all areas depended on properly deploying our personnel and securing all possible help from outside sources. From the outset we decided that it would be impractical for our crews to attempt a thorough recovery program both in the commercial fishery and on the streams. Consequently, commercial recoveries and returns were left almost solely to fishermen and cannery personnel, while Service personnel concentrated on the capture of tagged salmon in streams.

For the most part this procedure was satisfactory. Since by far the greatest part of the commercial recovery came from traps, the matter of capture and return was largely the work of trap watchmen and tendermen. Cannery bookkeepers aided in recording the pertinent information on the tag-recovery forms which had been provided them and also made reward payments for return of the tags. (Companies honoring tag recoveries were reimbursed by the Fish and Wildlife Service.)

The occasional errors and omissions that appeared on the tag-return forms are understandable since first-hand data were not always available to those recording the facts of capture. Cannery tenders generally have several traps to service in the course of a day's run, and if tags are not immediately accounted for at each trap their specific identity can very well be lost by the time they reach the cannery bins. Had it been possible for us to station Service personnel aboard the tenders and at the canneries, the accuracy of recovery information undoubtedly could have been improved, but it is doubtful whether total recovery would have increased measurably. The fact that almost 6,500 tags were returned to us by canneries and fishermen, with virtually no assistance from our personnel, is ample proof of the cooperation given us by the fishing industry.

Of all tags returned by the commercial fishery, traps accounted for 88 percent, purse seines 8.5 percent, gill nets 2 percent, and trollers 0.5 percent. One percent came from unknown sources.

Returns from Icy Strait tagging

Tables 1 and 2 summarize the recoveries from the tagging at Pleasant Island and Point Adolphus. The elapsed time represents the number of days from date of tagging to date of capture. Tag returns are listed by major geographical subdivisions in which capture was made. Chatham Strait recoveries are divided into two sections, the upper portion including the area from the junction of Icy and Chatham Straits at Rocky Island to a line crossing Chatham Strait at Point Gardner (southern tip of Admiralty Island), and the lower section including all headlands and waters south of this line.

About 7 percent of all the returns could not be listed according to specific headland, bay, or inlet, because information on the tag-return forms was inadequate. Whenever the data were sufficient to designate the general area of recovery, they were listed accordingly under Icy Strait, Chatham Strait, or Frederick Sound. All recoveries credited to Chatham Strait were identified as having been made in the upper section of the strait.

TABLE 1.—*Commercial recoveries of pink salmon tagged at Pleasant Island, Icy Strait, 1950*

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	July 27–28 (50 tagged)				July 30 (361 tagged)				July 31 (480 tagged)				Aug. 1–2 (178 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove																
Inian Island																
Point Adolphus																
Point Gustavus																
Eagle Point																
Porpoise Island																
Whitestone																
Spasski																
Excursion Inlet					1			19	2	15	19	17				
Port Frederick									1			15				
Icy Strait									2			24	1			23
Total	0 (0%)				1 (0.3%)				5 (1.0%)				1 (0.6%)			
Lynn Canal area:																
Naked Island					1			23								
Funter																
Eldred Rock																
Chilkat Inlet									1			19	1			17
Chilkoot Inlet									2			11				
Lutak Inlet									1			17				
Total	0 (0%)				1 (0.3%)				4 (0.8%)				1 (0.6%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter									1			24	2	15	20	18
Square Cove																
False Bay					1			27	1			16	1			16
Cube Point					1			18	1			21				
Point Hepburn	1			22					2			25				
Gypsum																
South Passage Point													1			13
Fishery Point					1			16	1			15				
Marble Bluff									3	16	24	19	2			13
Marble Cove																
Basket Bay	1			22	1			19								
Killisnoo					1			17	1			17				
Point Thatcher					1			20	1			16				
Peninsula Point									1			16				
Hood Bay					1			18								
Distant Point																
Eagle Point																
Chaik Bay					2	26	40	33	2	17	18	18				
Point Caution	2			21	1			18	2	15	18	17				
Point Turbot																
Wilson Cove									1			16				
Chatham Strait									3	21	26	24				
Total	4 (8.0%)				10 (2.8%)				20 (4.2%)				6 (3.4%)			
Lower Chatham Strait area:																
Red Bluff Bay					1			18					1			14
Kingsmill–Point Ellis	1			22	2	17	22	20	1			24				
Tebenkof Bay																
Gedney Harbor									1			23				
Total	1 (2.0%)				3 (0.8%)				2 (0.4%)				1 (0.6%)			
Frederick Sound–Stephens Passage area:																
Carroll Island																
Benson Cove																
Security Bay																
Saginaw Bay					1			25								
Point Brightman									1			16				
Point Cornwallis					1			17	1			26				
Deepwater Point																
Herring Bay									1			19				
Point McCartney																
Hamilton Bay																
Port Camden									1			18				
Cape Bendel																
Point Napean					1			19								
Pybus Bay					3	16	20	18	5	17	18	18	4	13	24	19
Pinta Point									1			23				
Gambier Bay																
Young Bay									2	15	19	17				
Taku Inlet	1			?	5			17	7	16	23	20	2			?
Portland Island																
Shelter Cove																
Frederick Sound																
Total	1 (2.0%)				11 (3.0%)				19 (4.0%)				6 (3.4%)			
Other areas:																
Tenakee Inlet																
Hoonah Sound					1			20	1			32				
Slocum Arm																
Affleck Canal																
Wrangell Narrows																
Warren Cove																
Total	0 (0%)				1 (0.3%)				1 (0.2%)				0 (0%)			
Unknown	0 (0%)				1 (0.3%)				4 (0.8%)				2 (1.0%)			
Grand total	6 (12.0%)				28 (7.8%)				55 (11.4%)				17 (9.6%)			

TABLE 1.—*Commercial recoveries of pink salmon tagged at Pleasant Island, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	Aug. 3 (258 tagged)				Aug. 4 (115 tagged)				Aug. 5 (729 tagged)				Aug. 6 (572 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove					1			13								
Inian Island																
Point Adolphus													1			11
Point Gustavus									1			?				
Eagle Point																
Porpoise Island																
Whitestone																
Spasski									2			14				
Excursion Inlet	1			16	1			12	3	11	13	12	5	9	16	13
Port Frederick	1			29												
Icy Strait	1			14	1			20	1			35	4	10	18	13
Total	3 (1.2%)				3 (2.6%)				7 (0.9%)				10 (1.8%)			
Lynn Canal area:																
Naked Island	1			14									2	10	11	11
Funter																
Eldred Rock																
Chilkat Inlet	1			14									2	8	19	13
Chilkoot Inlet	1			?					4	10	25	15	3	10	11	10
Lutak Inlet	1			?					3	7	12	10	3	8	16	10
Total	4 (1.5%)				0 (0%)				7 (0.9%)				10 (1.8%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter	1			37					7	10	19	12	8	9	12	10
Square Cove									3	14	20	17	1			9
False Bay	1			14									3	12	23	18
Cube Point	3	12	14	13	1			13	8	10	25	12	10	9	17	11
Point Hepburn									5	11	20	16	1			10
Gypsum																
South Passage Point	2	12	15	14					2	11	13	12	3	9	11	10
Fishery Point									2	11	12	12	5	9	15	10
Marble Bluff					2	11	13	12	6	10	13	12	4	9	12	10
Marble Cove	1			14					1			?	1			10
Basket Bay					1			12	5	12	16	13	4	9	11	11
Killisnoo					1			13	3	12	36	28	3	11	12	12
Point Thatcher									3	12	14	13	5	10	20	13
Peninsula Point									3	11	12	12	2			10
Hood Bay									2	11	28	20	2			11
Distant Point					1			13	1			12	1			11
Eagle Point																
Chaik Bay									1			20				
Point Caution	3	12	16	15					5	10	17	14	7	10	16	12
Point Turbot									1			16				
Wilson Cove									1			13	1			12
Chatham Strait									19	10	21	13	8	9	13	12
Total	11 (4.2%)				6 (5.2%)				78 (10.7%)				69 (12.0%)			
Lower Chatham Strait area:																
Red Bluff Bay									1			18	2	12	13	12
Kingsmill–Point Ellis									8	13	24	16	9	9	26	15
Tebenkof Bay					1			20								
Gedney Harbor									1			18				
Total	0 (0%)				1 (0.9%)				10 (1.4%)				11 (1.9%)			
Frederick Sound–Stephens Passage area:																
Carroll Island									1			10	2	11	18	15
Benson Cove									2			11				
Security Bay									1			12				
Saginaw Bay	1			13					2			12	1			17
Point Brightman	1			15	1			26	3	13	17	15				
Point Cornwallis									1			10				
Deepwater Point					1			17	9			?	2	12	16	14
Herring Bay	1			19					4	11	25	16	1			13
Point McCartney					1			18								
Hamilton Bay																
Port Camden																
Cape Bendel	2	13	16	14					1			21	3	11	13	12
Point Napean	1			14					1			13				
Pybus Bay	4	12	15	14	1			15	21	10	20	13	11	10	16	13
Pinta Point													1			17
Gambier Bay	1			?												
Young Bay	3	12	16	15					3			14	2			13
Taku Inlet	3			14					2			5	2			12
Portland Island																
Shelter Cove																
Frederick Sound													1			10
Total	17 (6.6%)				4 (3.5%)				51 (7.1%)				26 (4.5%)			
Other areas:																
Tenakee Inlet																
Hoonah Sound	1			16					2			21				
Slocum Arm	1			13												
Affleck Canal													1			13
Wrangell Narrows	1			18												
Warren Cove																
Total	3 (1.2%)				0 (0%)				2 (0.3%)				1 (0.2%)			
Unknown	3 (1.2%)				3 (2.6%)				11 (1.5%)				12 (2.1%)			
Grand total	41 (15.9%)				17 (14.8%)				166 (22.8%)				139 (24.3%)			

TABLE 1.—*Commercial recoveries of pink salmon tagged at Pleasant Island, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	Aug. 7 (811 tagged)				Aug. 8 (290 tagged)				Aug. 9 (202 tagged)				Aug. 10 (399 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove					1			10					1			7
Inian Island	1			8	1			31								
Point Adolphus	2			8					1			13				
Point Gustavus													2	6	8	7
Eagle Point					1			18	1			9				
Porpoise Island																
Whitestone																
Spasski	2			15									1			?
Excursion Inlet	8	8	19	11	8	7	15	11	1			7	7	5	23	9
Port Frederick	3	8	25	19	1			24	1			23				
Icy Strait	1			13	2	9	25	17					1			6
Total	17 (2.1%)				14 (4.8%)				4 (2.0%)				12 (3.0%)			
Lynn Canal area:																
Naked Island	4	9	12	10	2	9	14	12					1			6
Funter					1			30					1			4
Eldred Rock																
Chilkat Inlet													1			13
Chilkoot Inlet	3	9	12	10	1			?					5	6	20	13
Lutak Inlet	8	7	15	10	2	6	10	8	1			7	1			6
Total	15 (1.8%)				6 (2.1%)				1 (0.5%)				9 (2.3%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter	14	5	19	9	5	7	10	8	8	6	10	7	8	5	16	6
Square Cove	4	10	18	14									1			11
False Bay	1			11					3	6	16	10	2	5	15	10
Cube Point	17	8	18	11	6	7	13	9	10	6	13	8	7	5	11	6
Point Hepburn	9	10	19	16	1			9	2	7	14	11	3	6	9	8
Gypsum	2	8	12	10												
South Passage Point	2	8	10	9	3	9	16	12	2	8	15	12	4			7
Fishery Point	7	8	10	9	1			8	2	8	9	8	3	5	11	8
Marble Bluff	17			10	3	8	9	8	3	6	7	7	9	5	8	6
Marble Cove	3	9	10	9	2	8	9	8					1			6
Basket Bay	4	9	11	10	3	9	10	10	3			7	7	6	9	7
Killisnoo	9	8	34	12	1			8					3			7
Point Thatcher	8	9	12	10	4	8	9	8	1			17	9	6	16	10
Peninsula Point	4	9	12	10									2			12
Hood Bay	2			24	2			15					1			28
Distant Point	7	8	11	9									3	5	7	6
Eagle Point	4	9	14	10									1			9
Chaik Bay	1			10									2	20	29	24
Point Caution	8	8	12	10	5	8	10	9	1			17	4	6	12	8
Point Turbot									1			10				
Wilson Cove	6	11	12	11	1			10					2			6
Chatham Strait	24	8	22	12	9	9	22	13	6	6	15	9	17	5	20	9
Total	153 (18.9%)				46 (15.9%)				42 (20.8%)				89 (22.3%)			
Lower Chatham Strait area:																
Red Bluff Bay									1			12	1			28
Kingsmill–Point Ellis	14	9	19	15	7	9	25	13	5	7	15	10	5	6	19	11
Tebenkof Bay	3			?					3	9	20	15	1			8
Gedney Harbor	1			16					1			14				
Total	18 (2.2%)				7 (2.4%)				10 (4.9%)				7 (1.8%)			
Frederick Sound–Stephens Passage area:																
Carroll Island	1			12	2			8					1			9
Benson Cove																
Security Bay					1			15								
Saginaw Bay													1			7
Point Brightman	2	11	12	12	1			10					1			8
Point Cornwallis	1			9					1			7	2	6	8	7
Deepwater Point	4	9	15	10	2	10	13	12	3	9	13	12	7	7	15	8
Herring Bay	5	11	32	16	2	10	11	10					1			7
Point McCartney	7	10	14	12	3	13	14	13					2	9	15	12
Hamilton Bay																
Port Camden	1			17					1			10				
Cape Bendel	6	9	12	10	4	8	11	8	1			7	2	6	7	6
Point Napean	3	10	16	14					2	7	17	12				
Pybus Bay	27	9	15	11	4	10	11	11	5	9	10	10	8	5	12	9
Pinta Point	1			19									1			13
Gambier Bay																
Young Bay																
Taku Inlet																
Portland Island	1			3												
Shelter Cove																
Frederick Sound	4	9	11	10	1			9	2			7	3	8	12	10
Total	63 (7.8%)				20 (6.9%)				15 (7.4%)				29 (7.3%)			
Other areas:																
Tenakee Inlet	1			12												
Hoonah Sound	3			24												
Slocum Arm													1			14
Affleck Canal	1			17												
Wrangell Narrows																
Warren Cove																
Total	5 (0.6%)				0 (0%)				0 (0%)				1 (0.2%)			
Unknown	23 (2.8%)				10 (3.4%)				7 (3.5%)				12 (3.0%)			
Grand total	294 (36.2%)				103 (35.5%)				79 (39.1%)				159 (39.9%)			

TABLE 1.—*Commercial recoveries of pink salmon tagged at Pleasant Island, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	Aug. 11 (380 tagged)				Aug. 12 (942 tagged)				Aug. 13 (994 tagged)				Aug. 14 (739 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove	1			7	1			6	4			5	1			4
Inian Island													3			2
Point Adolphus					1			3	3	2	11	5				
Point Gustavus									2			5	3	2	4	3
Eagle Point					1			6	3	5	10	7	5	4	9	5
Porpoise Island																
Whitestone									1			11	1			10
Spasski					2	5	7	6	7	3	4	3	14	2	3	3
Excursion Inlet	3	4	10	6	26	3	9	4	33	2	20	5	118	1	27	3
Port Frederick	1			21					1			2	1			18
Icy Strait	1			5	7	4	26	10	3			2	21			3
Total	6 (1.6%)				38 (4.0%)				57 (5.8%)				167 (22.6%)			
Lynn Canal area:																
Naked Island	1			5	9	3	10	4	14	3	12	4	3	2	18	6
Funter									1			5				
Eldred Rock													1			8
Chilkat Inlet					1			4								
Chilkoot Inlet					2	11	13	12	3	9	12	10	3	9	16	13
Lutak Inlet	1			4	3	3	10	6	2	5	8	6	1			4
Total	2 (0.5%)				15 (1.6%)				20 (2.0%)				8 (1.1%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter	14	4	13	6	40	3	12	5	78	2	18	4	47	1	10	3
Square Cove	1			8	3			5	13	2	4	3	24	1	9	4
False Bay	2	5	15	10	4	5	17	10	8	3	13	4	10	2	3	2
Cube Point	6	4	11	6	26	3	9	4	52	2	19	4	38	1	15	3
Point Hepburn	4	8	15	10	8	3	13	7	16	3	12	9	19	2	15	5
Gypsum	2	4	8	6	2	5	6	6	1			?	1			5
South Passage Point	7	4	8	6	6	4	13	6	4	2	11	5				
Fishery Point					9	3	12	5	15	2	8	2	7	2	7	4
Marble Bluff	8	5	8	6	15	3	14	6	21	2	9	3	28	1	10	3
Marble Cove					5	4	5	4	4			4	5	2	3	3
Basket Bay	5	5	7	6	15	3	9	6	8	2	8	5	4	1	7	4
Killisnoo	2	6	10	8	13	4	29	8	13	2	14	4	3	9	27	21
Point Thatcher	3			5	18	4	7	4	12	3	4	3	6	5	12	9
Peninsula Point	3	5	8	6	7	4	10	6	1			9	2	5	8	6
Hood Bay	4	6	28	13	1			28	2			18	3	18	26	22
Distant Point	2	7	13	10	10	3	6	5	7	3	4	3	5	1	6	3
Eagle Point	1			10	2	4	5	4	2			8				
Chaik Bay	3	9	28	19	1			20	5	5	19	14				
Point Caution	5	6	12	7	22	3	12	6	16	3	10	5	6	4	12	5
Point Turbot					2			9								
Wilson Cove	2	7	8	8	7	4	6	6	7	3	12	6	2			5
Chatham Strait	21	4	19	6	51	3	17	8	80	2	27	5	49	2	26	6
Total	95 (25.0%)				267 (28.3%)				365 (36.7%)				259 (35.1%)			
Lower Chatham Strait area:																
Red Bluff Bay	2	10	13	12	3	10	11	11	2			8	1			9
Kingsmill-Point Ellis	15	5	29	10	20	3	17	9	18	3	20	10	9	4	26	12
Tebenkof Bay					1			12	2	10	17	14	1			16
Gedney Harbor					4	11	16	14								
Total	17 (4.5%)				28 (3.0%)				22 (2.2%)				11 (1.5%)			
Frederick Sound–Stephens Passage area:																
Carroll Island	3	6	12	8	7	5	12	7	5	4	11	7	3	5	9	6
Benson Cove					1			5					1			16
Security Bay																
Saginaw Bay					3	9	12	11	2			?				
Point Brightman	3	5	8	6	3	6	20	10	3	5	17	9	2	5	18	10
Point Cornwallis	2			4	2	6	18	12	2			5	1			12
Deepwater Point	5	7	8	7	8	4	10	8	8	5	13	8	2	5	8	6
Herring Bay	1			7	5	5	18	8	6	5	16	8	5	4	25	10
Point McCartney					2	6	10	8	2			6				
Hamilton Bay									2	8	13	10				
Port Camden					1			8								
Cape Bendel	1			8	2			4	2			6				
Point Napean	1			10					2	4	5	4	4	5	9	7
Pybus Bay	16			11	25	3	14	8	12	5	15	8	3	2	5	3
Pinta Point	3			7	2	6	14	10					1			8
Gambier Bay																
Young Bay																
Taku Inlet																
Portland Island									1			?				
Shelter Cove																
Frederick Sound									1			19	1			18
Total	35 (9.2%)				67 (7.1%)				53 (5.3%)				23 (3.1%)			
Other areas:																
Tenakee Inlet																
Hoonah Sound	1			29	5	9	28	14	1			27				
Slocum Arm													1			2
Affleck Canal																
Wrangell Narrows																
Warren Cove																
Total	1 (0.2%)				5 (0.5%)				1 (0.1%)				1 (0.1%)			
Unknown	6 (1.6%)				27 (2.9%)				16 (1.6%)				9 (1.2%)			
Grand total	162 (42.6%)				447 (47.4%)				534 (53.7%)				478 (64.7%)			

TABLE 1.—*Commercial recoveries of pink salmon tagged at Pleasant Island, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—												Total recoveries (8,278 tagged)
	Aug. 27 (96 tagged)				Aug. 30 (306 tagged)				Sept. 5 (376 tagged)				
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean	
Icy Strait area:													
Gull Cove													10
Inian Island													5
Point Adolphus					1			5					9
Point Gustavus	2			4	5			1					15
Eagle Point	2			2	2			3					15
Porpoise Island					1			8					1
Whitestone													2
Spasski									1			2	29
Excursion Inlet	16	1	6	3	44	1	11	4	6	2	4	3	283
Port Frederick	2			2	1			2					13
Icy Strait	4	1	5	3	5	3	11	5					55
Total	26 (27.1%)				59 (19.3%)				7 (1.9%)				437 (5.3%)
Lynn Canal area:													
Naked Island									1			2	39
Funter													3
Eldred Rock													1
Chilkat Inlet													7
Chilkoot Inlet													27
Lutak Inlet													27
Total	0 (0%)				0 (0%)				1 (0.3%)				104 (1.2%)
Upper Chatham Strait area:													
Hawk Inlet–Funter	2			4	5	1	9	4	1			?	241
Square Cove					1			8	5			2	56
False Bay					2	1	10	5	1			4	40
Cube Point	1			2	4	1	9	4	11	3	8	5	202
Point Hepburn	1			2	2			3	4	2	4	2	78
Gypsum					2			2	2			2	12
South Passage Point													36
Fishery Point									1			3	54
Marble Bluff	1			2	1			?	1			2	124
Marble Cove									1			?	24
Basket Bay													61
Killisnoo													53
Point Thatcher									1			3	72
Peninsula Point													25
Hood Bay					3	8	10	9					23
Distant Point													37
Eagle Point													10
Chalk Bay													17
Point Caution													87
Point Turbot													4
Wilson Cove													30
Chatham Strait	20	2	11	4	27	1	10	4	33	2	10	3	367
Total	25 (26.0%)				47 (15.4%)				61 (16.2%)				1,653 (20.0%)
Lower Chatham Strait area:													
Red Bluff Bay													15
Kingsmill-Point Ellis					1			11					115
Tebenkof Bay													12
Gedney Harbor													8
Total	0 (0%)				1 (0.3%)				0 (0%)				150 (1.8%)
Frederick Sound–Stephens Passage area:													
Carroll Island													25
Benson Cove													4
Security Bay													2
Saginaw Bay													11
Point Brightman													21
Point Cornwallis													14
Deepwater Point													51
Herring Bay					2			10					34
Point McCartney													17
Hamilton Bay													2
Port Camden									2			?	6
Cape Bendel													24
Point Napean													15
Pybus Bay					1			?					150
Pinta Point													10
Gambier Bay													1
Young Bay													10
Taku Inlet													23
Portland Island													1
Shelter Cove													2
Frederick Sound													22
Total	0 (0%)				3 (1.0%)				2 (0.5%)				445 (5.4%)
Other areas:													
Tenakee Inlet													1
Hoonah Sound													15
Slocum Arm													3
Affleck Canal													2
Wrangell Narrows													1
Warren Cove					1			?					1
Total	0 (0%)				1 (0.3%)				0 (0%)				23 (0.3%)
Unknown	2 (2.1%)				5 (1.6%)				1 (0.3%)				154 (1.8%)
Grand total	53 (55.2%)				116 (37.9%)				72 (19.2%)				2,966 (35.8%)

TABLE 2.—*Commercial recoveries of pink salmon tagged at Point Adolphus, Icy Strait, 1950*

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	July 25–Aug. 2 (263 tagged)				Aug. 3 (526 tagged)				Aug. 4 (458 tagged)				Aug. 5 (133 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove																
Point Gustavus	1			?												
Point Adolphus, No. 6																
North Island																
Pleasant Island																
Eagle Point																
Port Frederick									1			28				
Spasski									1			?				
Whitestone																
Excursion Inlet					3	2	19	12	3	12	17	15	1			11
Icy Strait	1			20					1			14				
Total	2 (0.8%)				3 (0.6%)				6 (1.3%)				1 (0.8%)			
Lynn Canal area:																
Funter																
Naked Island													1			14
Chilkat Inlet																
Chilkoot Inlet					2	7	13	10								
Lutak Inlet									1			13				
Total	0 (0%)				2 (0.4%)				1 (0.2%)				1 (0.8%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter	1			10	5	4	14	10	7	11	13	12	1			11
Square Cove													1			10
False Bay									3	12	22	15				
Cube Point	3	17	22	20	2	13	14	14	4	11	15	12				
Point Hepburn									3	12	21	15				
Gypsum									1			14	1			10
South Passage Point	1			15	2			12	2			11	1			11
Fishery Point					1			14	2	11	12	12				
Marble Bluff					5	12	22	15	2	11	21	16	1			14
Marble Cove					3	13	14	14								
Basket Bay									3	12	14	13				
Danger Point																
Killisnoo					1			15	6	12	20	14	1			13
Point Thatcher					2			13	3	13	22	20				
Peninsula Point					1			13	1			13	1			11
Hood Bay																
Distant Point	1			14	1			13	2	11	12	12	4	11	12	11
Chaik Bay					2	14	36	25								
Point Caution					2	12	15	14	4	11	15	12	1			11
Eagle Point					1			15	1			12				
Point Turbot					1			18	1			15	1			21
Wilson Cove									1			15				
Chatham Strait					7	12	18	14	5	12	29	20				
Total	6 (2.3%)				36 (6.8%)				51 (11.1%)				13 (9.7%)			
Lower Chatham Strait area:																
Red Bluff Bay					1			14	2	15	17	16				
Kingsmill–Point Ellis					3	14	16	15	3	16	25	19	2	11	19	15
Tebenkof Bay					2	15	21	18	2	13	19	16				
Gedney Harbor																
Total	0 (0%)				6 (1.1%)				7 (1.5%)				2 (1.5%)			
Frederick Sound–Stephens Passage area:																
Carroll Island					3	13	15	14								
Benson Cove									2			11				
Security Bay					1			14	1			13				
Saginaw Bay					1			14					1			12
Point Brightman																
Point Cornwallis									1			22				
Deepwater Point					3	14	15	14	3	14	17	16	1			?
Herring Bay	1			20	1			16								
Point McCartney									1			17				
Hamilton Bay																
Port Camden					1			14								
Cape Bendel					1			14	3	13	15	15				
Point Napean					1			12	1			17				
Pybus Bay	5	15	20	18	15	13	23	16	15	11	22	16	5	11	16	12
Pinta Point																
Gambier Bay																
Young Bay					2			16								
Taku Inlet	4			10	1			?	2	11	38	24				
Frederick Sound					4	15	36	20					1			35
Total	10 (3.8%)				34 (6.5%)				29 (6.4%)				8 (6.0%)			
Other areas:																
Tenakee Inlet																
Hoonah Sound																
Salisbury Sound	1			17												
Slocum Arm	1			30												
Warren Cove									1			16				
Stikine Flats																
Tokeen																
Affleck Canal																
Total	2 (0.8%)				0 (0%)				1 (0.2%)				0 (0%)			
Unknown	1 (0.3%)				4 (0.8%)				3 (0.7%)				0 (0%)			
Grand total	21 (8.0%)				85 (16.2%)				98 (21.4%)				25 (18.8%)			

TABLE 2.—*Commercial recoveries of pink salmon tagged at Point Adolphus, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	Aug. 6 (525 tagged)				Aug. 7 (335 tagged)				Aug. 8 (905 tagged)				Aug. 9 (149 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove									1			9				
Point Gustavus																
Point Adolphus, No. 6																
North Island																
Pleasant Island																
Eagle Point					1			11								
Port Frederick					2			25								
Spasski					2			12	4	8	11	9				
Whitestone																
Excursion Inlet	1			9					3	8	10	8				
Icy Strait									4	13	25	16				
Total	1 (0.2%)				5 (1.5%)				12 (1.3%)				0 (0%)			
Lynn Canal area:																
Funter																
Naked Island	1			11	2	9	10	10	3	8	14	10	2	10	20	15
Chilkat Inlet									2	14	16	15				
Chilkoot Inlet	3	8	10	9					6	8	15	10				
Lutak Inlet	1			11	3	11	12	11	4	1	8	6				
Total	5 (1.0%)				5 (1.5%)				15 (1.6%)				2 (1.3%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter	3	9	11	10	7	8	18	10	5	7	8	8	2	6	7	6
Square Cove	1			16	1			14	2	7	14	10				
False Bay	2	10	11	10	1			9	3	7	18	12	1			7
Cube Point	8	9	12	10	5	8	15	10	16	7	13	8	2	8	19	14
Point Hepburn	3	13	19	18	1			9	9	8	17	10				
Gypsum	1			12	1			10	2	7	10	8	1			8
South Passage Point	5	9	15	10	4	8	10	9	4	10	17	12	2	8	15	12
Fishery Point	4	9	10	10	2	10	14	12	2	7	8	8	2			6
Marble Bluff					4			8	15	7	17	9	2	6	8	7
Marble Cove	1			10					6	8	9	9	1			7
Basket Bay	5	10	12	11	3	9	10	10	10	8	13	9	2			7
Danger Point					1			1								
Killisnoo	3	10	11	10	2	8	9	8	10	7	16	10	2	6	8	7
Point Thatcher	7	10	20	15	3	9	12	10	12	8	18	11				
Peninsula Point	2	10	11	10					3			8				
Hood Bay	2	25	26	26	1			15	3			13	1			23
Distant Point	3	11	34	20	3	9	10	10	2	9	14	8	1			8
Chaik Bay	2	11	33	22					5	17	25	20				
Point Caution	5	10	17	13	3	10	17	15	18	7	16	10	6	6	17	9
Eagle Point					1			9	2			9	1			7
Point Turbot					1			14	2	11	13	12	1			12
Wilson Cove	1			12					3			10				
Chatham Strait	6	9	16	12	4	9	34	18	23	7	32	12	2	7	15	11
Total	64 (12.2%)				48 (14.3%)				158 (17.5%)				29 (19.5%)			
Lower Chatham Strait area:																
Red Bluff Bay	4	10	19	15					2			30	1			7
Kingsmill–Point Ellis	10	9	16	13	7	14	19	16	22	8	21	11	5	7	15	10
Tebenkof Bay					1			11	2	15	16	16	1			15
Gedney Harbor																
Total	14 (2.6%)				8 (2.4%)				26 (2.9%)				7 (4.7%)			
Frederick Sound–Stephens Passage area:																
Carroll Island					1			17	6	7	16	11	1			7
Benson Cove	1			11	3	8	9	8	1			7				
Security Bay									1			9				
Saginaw Bay	1			?	1			16								
Point Brightman	3	10	12	11	1			26	3	8	22	14				
Point Cornwallis	2	9	24	16	3	11	23	15	1			7				
Deepwater Point	4	11	12	11	2	8	14	11	6	9	16	12	1			6
Herring Bay	5	10	16	12	2			11	1			10				
Point McCartney	2	12	15	14	1			11	1			10				
Hamilton Bay													1			17
Port Camden	1			12									1			10
Cape Bendel	2	10	11	10	3	9	10	10	5	8	11	9				
Point Napean																
Pybus Bay	19	10	20	13	11	9	15	12	33	7	18	12	2	7	9	8
Pinta Point																
Gambier Bay					1			12								
Young Bay					1			12								
Taku Inlet																
Frederick Sound	2	10	12	11	1			11	5	7	10	8				
Total	42 (8.0%)				31 (9.2%)				63 (7.0%)				6 (4.0%)			
Other areas:																
Tenakee Inlet	1			10												
Hoonah Sound									1			32				
Salisbury Sound																
Slocum Arm	1			18												
Warren Cove					1			13	1			12				
Stikine Flats									1			16				
Tokeen									1			16				
Affleck Canal																
Total	2 (0.4%)				1 (0.3%)				4 (0.4%)				0 (0%)			
Unknown	8 (1.5%)				4 (1.2%)				24 (2.7%)				1 (0.7%)			
Grand total	136 (25.9%)				102 (30.4%)				302 (33.4%)				45 (30.2%)			

TABLE 2.—*Commercial recoveries of pink salmon tagged at Point Adolphus, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—															
	Aug. 10 (1,110 tagged)				Aug. 11 (623 tagged)				Aug. 12 (996 tagged)				Aug. 13 (667 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean
Icy Strait area:																
Gull Cove					1			7	2			6	3			4
Point Gustavus	3			6	2	5	12	8					3			5
Point Adolphus, No. 6													1			4
North Island									1			3				
Pleasant Island									3	3	25	10	7			2
Eagle Point									3			6	3	5	12	7
Port Frederick	1			5												
Spasski	1			6	2	5	11	8	8	4	17	6	7	3	4	4
Whitestone													1			11
Excursion Inlet	6	6	19	11	7	5	8	7	23	3	21	6	24	2	10	3
Icy Strait	7	6	19	10	3	5	9	7	4	4	5	5	11	3	15	7
Total	18 (1.6%)				15 (2.4%)				44 (4.4%)				60 (9.0%)			
Lynn Canal area:																
Funter																
Naked Island	10	6	12	7	7	5	11	6	12	4	13	6	12	3	9	5
Chilkat Inlet																
Chilkoot Inlet	2	6	13	10	1			?	6	11	18	14				
Lutak Inlet	5	5	12	8	1			8	3	6	7	6				
Total	17 (1.5%)				9 (1.4%)				21 (2.1%)				12 (1.8%)			
Upper Chatham Strait area:																
Hawk Inlet–Funter	19	5	14	7	19	4	15	7	31	3	11	4	54	2	13	3
Square Cove	5	7	19	13	2			8	10	3	11	6	19	2	8	3
False Bay	4	7	16	9	4	5	18	9	5	4	13	6	9	3	13	5
Cube Point	31	5	20	6	25	4	18	6	40	3	17	4	50	2	16	3
Point Hepburn	9	6	16	11	6	5	15	10	9	4	13	8	13	3	12	6
Gypsum	3	5	8	6	1			7	1			7	2			2
South Passage Point	12	5	14	8	4	4	13	7	2	3	6	4	3	2	8	4
Fishery Point	9	5	7	6	6	4	6	5	15	3	10	6	5	2	3	2
Marble Bluff	9	5	14	7	9	4	13	6	19	3	14	6	23	2	4	3
Marble Cove	3			6	1			5	4			5	4	4	5	4
Basket Bay	11	5	11	7	11	5	10	7	12	4	9	6	4	2	4	3
Danger Point																
Killisnoo	19	5	14	8	9	5	30	12	9	4	9	5	5	5	13	7
Point Thatcher	10	6	9	7	4	5	8	6	6	4	14	10	8	3	13	9
Peninsula Point	6	6	13	8	4	5	15	7	6	5	10	8	1			4
Hood Bay	4	7	12	9	4	4	26	13	3	3	28	10				
Distant Point	8	6	8	7	9	4	13	6	13	3	7	4	11	2	20	5
Chaik Bay	5	15	30	20	2	14	28	21	5	13	20	17				
Point Caution	21	5	14	8	13	4	12	6	21	3	12	6	9	3	6	4
Eagle Point	2	6	7	6	4	5	8	6	1			9	1			8
Point Turbot	1			11	2			10								
Wilson Cove	3	6	8	7	3	5	7	6	3	6	13	7	3	3	5	4
Chatham Strait	39	5	30	9	27	4	19	7	53	3	14	6	50	2	15	4
Total	233 (21.0%)				169 (27.1%)				268 (26.9%)				274 (41.1%)			
Lower Chatham Strait area:																
Red Bluff Bay	5	11	14	12	5	8	18	11	8	5	11	9	4	4	9	6
Kingsmill–Point Ellis	38	6	15	10	30	5	22	10	34	4	18	8	11	3	13	9
Tebenkof Bay	7	12	20	16	4	7	13	11	7	11	18	13	2	10	17	14
Gedney Harbor					1			12	1			11				
Total	50 (4.5%)				40 (6.4%)				50 (5.0%)				17 (2.5%)			
Frederick Sound–Stephens Passage area:																
Carroll Island	2	6	8	7	2			13	7			6	3	4	6	5
Benson Cove	5	6	20	15					3			5				
Security Bay	1			7	1			12	1			5	1			4
Saginaw Bay	2			14	1			6	1			12	1			11
Point Brightman	5	8	12	9	7	5	22	10	2	6	18	12	2	9	17	13
Point Cornwallis	9	5	20	10	4	7	15	9	6	3	6	4				
Deepwater Point	11	7	16	10	3	6	10	8	12	5	14	7	4	4	8	6
Herring Bay	9	6	11	8	5	6	19	14	8	4	10	8	1			17
Point McCartney	5	7	11	9					5	9	10	10	3	5	9	6
Hamilton Bay													1			13
Port Camden	3	8	11	10	1			8	2	6	10	8				
Cape Bendel	7	6	9	8	6	5	11	6	1			5	4	4	6	4
Point Napean	6	7	12	10	1			6	1			10	1			9
Pybus Bay	33	6	16	9	18	4	15	10	19	4	14	9	8	8	13	11
Pinta Point	1			12	4	11	15	12	5	6	11	8	2			10
Gambier Bay																
Young Bay																
Taku Inlet																
Frederick Sound	7	6	12	8	6	5	7	6	4	4	6	5	1			5
Total	106 (9.5%)				59 (9.5%)				77 (7.8%)				32 (4.8%)			
Other areas:																
Tenakee Inlet																
Hoonah Sound	2	11	30	20	3	8	20	16	3	7	18	12				
Salisbury Sound					2	8	11	10	1			7	1			5
Slocum Arm																
Warren Cove									1			8	1			7
Stikine Flats																
Tokeen																
Affleck Canal									1			11				
Total	2 (0.2%)				5 (0.8%)				6 (0.6%)				3 (0.4%)			
Unknown	35 (3.2%)				14 (2.3%)				16 (1.6%)				16 (2.4%)			
Grand total	461 (41.5%)				311 (49.9%)				482 (48.4%)				414 (62.0%)			

TABLE 2.—*Commercial recoveries of pink salmon tagged at Point Adolphus, Icy Strait, 1950*—Continued

[Does not include tagged fish recovered at point of tagging]

Recovered in—	Recoveries of fish tagged in period—												Total recoveries (7,317 tagged)
	Aug. 14 (344 tagged)				Sept. 4 (203 tagged)				Sept. 4 (80 tagged) [1]				
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean	
y Strait area:													
Gull Cove	1			4					1			4	9
Point Gustavus	3	2	4	3									12
Point Adolphus, No. 6													1
North Island													1
Pleasant Island					5	1	3	1	1			1	16
Eagle Point													7
Port Frederick	1			1									5
Spasski	5	2	3	2									30
Whitestone													1
Excursion Inlet	33	1	5	2	6	3	5	4	1			5	111
Icy Strait	11	2	10	3	2			5					44
Total	54 (15.7%)				13 (6.4%)				3 (3.7%)				237 (3.2%)
yan Canal area:													
Funter	3	4	6	5	1			2					4
Naked Island	3	2	8	4									53
Chilkat Inlet													2
Chilkoot Inlet	1			12									21
Lutak Inlet													18
Total	7 (2.0%)				1 (0.5%)				0 (0%)				98 (1.3%)
pper Chatham Strait area:													
Hawk Inlet–Funter	19	2	12	3	1			4					174
Square Cove	10	1	9	3	2			3	1			5	55
False Bay	4	2	3	2									36
Cube Point	16	1	8	2	5	3	4	3					207
Point Hepburn	12	2	11	4	1			3					66
Gypsum													14
South Passage Point	2	2	7	4					1			3	45
Fishery Point	4	2	7	4									52
Marble Bluff	7	1	15	5	1			?					97
Marble Cove	2	2	3	2									25
Basket Bay	2	4	7	6									63
Danger Point													1
Killisnoo	3	5	27	16									70
Point Thatcher	2	2	5	4									57
Peninsula Point	3	3	8	6									28
Hood Bay													18
Distant Point	4	1	10	4									62
Chatk Bay	3	11	14	13									24
Point Caution	5			5									108
Eagle Point													14
Point Turbot													10
Wilson Cove	1			4									18
Chatham Strait	23	2	12	5	6	3	5	4	2	2	5	4	247
Total	122 (35.5%)				16 (7.9%)				4 (5.0%)				1,491 (20.4%)
wer Chatham Strait area:													
Red Bluff Bay													32
Kingsmill–Point Ellis	6	4	12	8	4			5					175
Tebenkof Bay	1			8									29
Gedney Harbor													2
Total	7 (2.0%)				4 (2.0%)				0 (0%)				238 (3.2%)
Frederick Sound–Stephens Passage area:													
Carroll Island	1			4									26
Benson Cove													15
Security Bay													7
Saginaw Bay													9
Point Brightman													23
Point Cornwallis													26
Deepwater Point													50
Herring Bay	1			5									34
Point McCartney	1			5									19
Hamilton Bay													2
Port Camden													9
Cape Bendel													32
Point Napean	2	5	9	7	1			4					14
Pybus Bay	2	2	8	5									185
Pinta Point	1			9									13
Gambier Bay													1
Young Bay													3
Taku Inlet													7
Frederick Sound	3	4	9	7									34
Total	11 (3.2%)				1 (0.5%)				0 (0%)				509 (7.0%)
ner areas:													
Tenakee Inlet													1
Hoonah Sound	1			16									10
Salisbury Sound													5
Slocum Arm													2
Warren Cove	1			6									6
Stikine Flats													1
Tokeen													2
Affleck Canal													1
Total	2 (0.6%)				0 (0%)				0 (0%)				28 (0.4%)
Unknown	6 (1.8%)				3 (1.4%)				2 (2.5%)				137 (1.9%)
Grand total	209 (60.8%)				38 (18.7%)				9 (11.2%)				2,738 (37.4%)

[1] Tagging at Columbia River Packers Association Point Adolphus trap No. 6; all other tagging at their Adolphus trap No. 4.

Those recoveries listed as "Unknown" include the returns with insufficient data.

The recoveries show that fish tagged on opposite sides of Icy Strait follow similar migratory routes and do not necessarily follow along the shoreline from which they were originally tagged. Total recovery of fish tagged at Pleasant Island was 35.8 percent, and of those tagged at Point Adolphus 37.4 percent. By treating only the comparable data (July 27, 28, and 31, and August 1 through 14), a comparison of numbers tagged and recovered suggests that the two groups of fish were subjected to similar fishing intensities (chi square=1.274, d.f. 1, $0.2<P<0.3$).

The returns imply that the migratory routes (fig. 2) are similar to those found by earlier investigators (Rich 1926, Rich and Suomela 1927, Rich and Morton 1929): that pink salmon, after appearing in Icy Strait, distribute eastward through Icy Strait, southward into Chatham Strait, and then eastward into Frederick Sound and Stephens Passage. Minor runs go into Lynn Canal, Peril Strait, and South Chatham Strait.

Most of the fishery is east of the point of tagging. To determine direction of movement of the fish, we examined tag returns from traps in Icy Strait and Cross Sound. The data show that, although fishing intensities of the selected traps in the areas to the east and to the west of the point of tagging were nearly equal, 85.7 percent of the tag returns came from areas to the east of the point of tagging.

In examining recoveries for evidence of random movement of the salmon, the number of tags recovered west of the tagging point was compared with the number recovered east of that point. Seven traps to the west of Pleasant Island took a total of 36,846 pink salmon, while 6 traps to the east took 26,740. Thirty-five tags were recovered in the western section, and 213 tags in the eastern section (see table 3). Assuming a random movement of the fish, one would expect 144 tags $\left(\frac{248}{63,586}\times 36,846\right)$ from the western section and 104 tags $\left(\frac{248}{63,586}\times 26,740\right)$ from the eastern section. Comparing these expected recoveries with the actual gives a chi-square value of 196 with one degree of freedom. Thus, the hypothesis of random movement of the fish must be rejected at any reasonable level of significance.

A similar computation for the returns from the Point Adolphus tagging yields a chi-square value of 41 with one degree of freedom, and again the hypothesis of random movement must be rejected at any usual level of significance. Clearly, then, the predominant movement of pink salmon in Icy Strait is in an easterly direction.

In interpreting these data, it should be noted that they account only for the movement of salmon from point of release to point of capture. As most of the Icy Strait tagging was done before the start of the fishing season, many of the tagged fish enjoyed a week or more of freedom before they were intercepted by the fishery. We can only

TABLE 3.—*Comparison of easterly and westerly dispersion of pink salmon in Icy Strait as indicated by tag recoveries at 13 fish traps operating full time in this area*

[Returns from Point Adolphus and Pleasant Island tagging for period July 25 through August 30]

Tag returns west of tagging points	Tags recovered	Tag returns east of tagging points	Tags recovered
From Pleasant Island tagging (total pink salmon catch, 36,846), taken at –		From Pleasant Island tagging (total pink salmon catch, 26,740), taken at—	
Point Gustavus	15	Eagle Point	10
Point Adolphus, No. 4	8	North Village Point	69
Point Adolphus, No. 6	1	Village Point	34
Gull Cove	10	Rocky Point	63
Inian Island	1	Hawk Inlet, No. 9	7
North Island	0	Spasski	30
Three Hill Island	0		
Total	35	Total	213
From Point Adolphus tagging (total pink salmon catch, 25,935), taken at—		From Point Adolphus tagging (total pink salmon catch, 37,551), taken at—	
Point Gustavus	12	Pleasant Island	10
Point Adolphus, No. 6	1	Eagle Point	7
Gull Cove	8	North Village Point	19
Inian Island	0	Village Point	19
North Island	1	Rocky Point	35
Three Hill Island	0	Hawk Inlet, No. 9	5
		Spasski	30
Total	22	Total	125
Total returns west of tagging points	57	Total returns east of tagging points	338

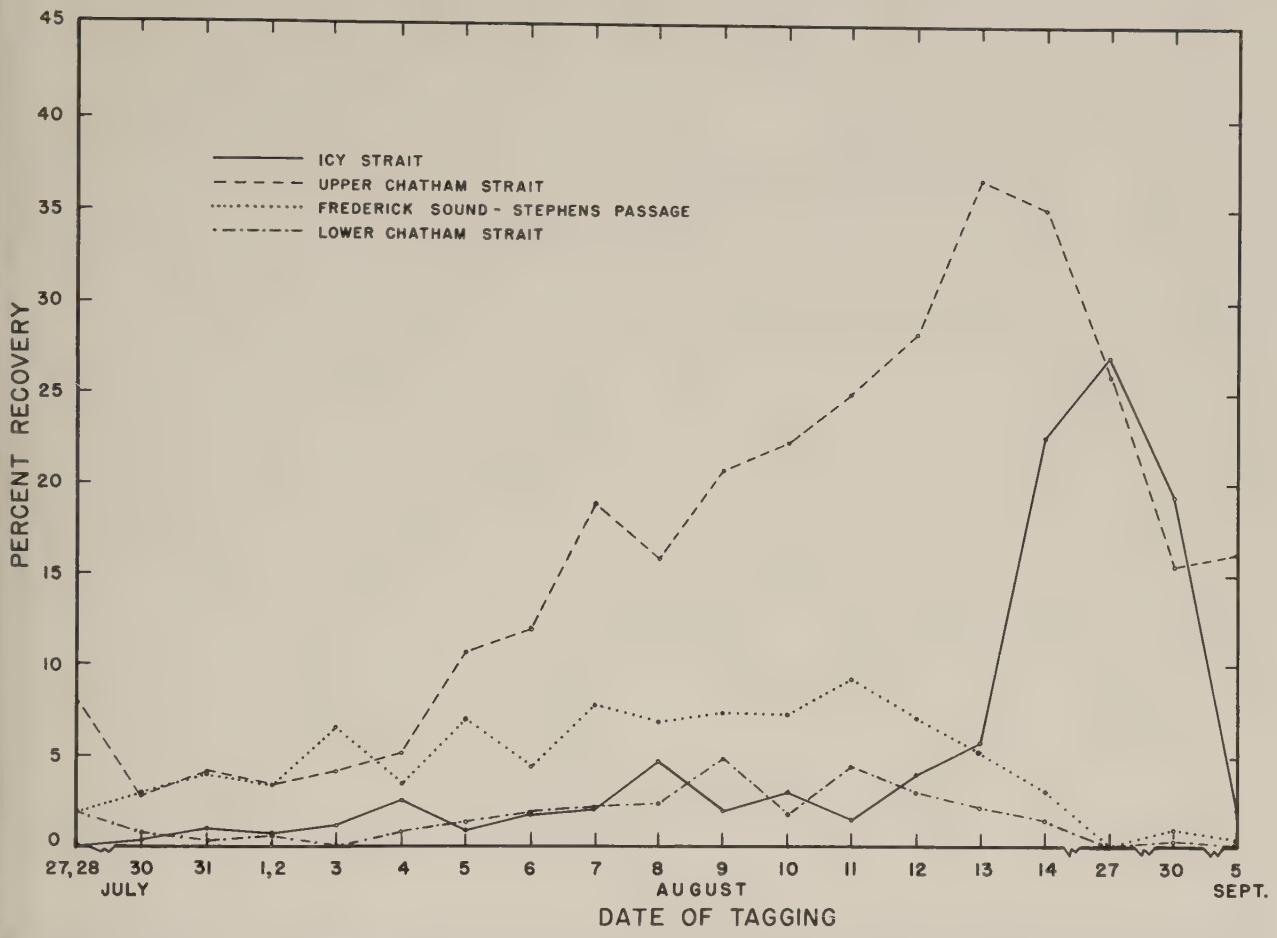

FIGURE 7.—Pleasant Island tagging, 1950: Percentage commercial recovery, by date of tagging and principal areas of recovery.

postulate as to their specific movements during this period, but the fish may well have traveled in a "to and fro" manner as described by Verhoeven (1952). Nevertheless, the prevailing movement appears to have been easterly, toward the inner channels where the more important spawning areas are located.

Seasonal distribution of tag returns by areas (figs. 7 and 8) indicate that the majority of the fish entering Icy Strait from July 25 to August 12 were not taken by the fishery in Icy Strait which opened on August 15. There are two possible explanations: (1) Early races destined for Icy Strait streams had already moved into or near their parent streams, and (2) those fish destined for more distant streams did not linger in Icy Strait but moved rapidly on. The sharp rise in Icy Strait recoveries of those fish tagged immediately before the opening of the commercial season is good evidence that migration through Icy Strait is comparatively rapid. This is clearly evident in the returns from the Pleasant Island tagging of August 13 and 14. Of those fish tagged 2 days before the opening of the commercial season, 5.8 percent were captured in Icy Strait. Of these fish tagged just a day before the opening of fishing, 22.6 percent were recovered in Icy Strait, showing an increase of about 4 times over the percentage returned from the previous day's tagging.

The recovery pattern in Upper Chatham Strait does not follow the trend evidenced in Icy Strait. Here there was a strikingly uniform increase in the percentage of recoveries made from each day's tagging as the date of tagging approached the opening day of the commercial season. The drop in percentage recovery from the tagging of August 13 to that of August 14 could be attributed to the marked increase in recovery in Icy Strait from the corresponding day's tagging. Recoveries of

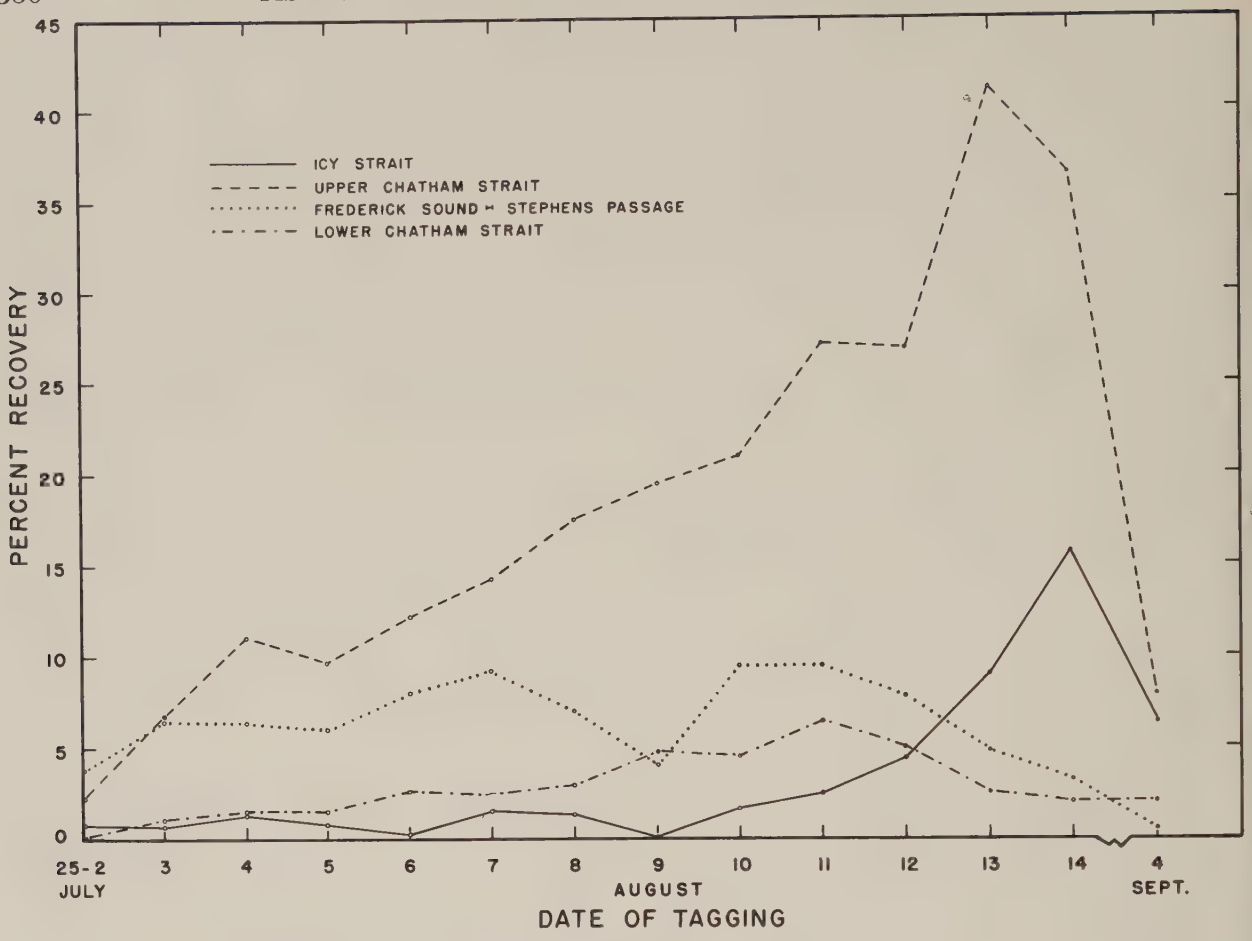

FIGURE 8.—Point Adolphus tagging, 1950: Percentage commercial recovery, by date of tagging and principal areas of recovery.

almost 19 percent were made in the Upper Chatham Strait area from fish tagged as early as August 7, indicating that a far greater percentage of the early tagged fish was susceptible to capture in this area than in Icy Strait.

For both Frederick Sound and Lower Chatham Strait, the percentages of commercial recoveries from the tagging after August 11 show a decline. There are two explanations for this: (1) Opening of the fishing season on August 15 increased the chances of capture near the point of tagging, and (2) increasing numbers of the fish tagged during the latter period were moving to streams less distant from the point of tagging. Those runs moving to the more distant streams, thus being subjected to capture over a considerable distance, will naturally show declines in their escapements as the fishery begins to draw upon them along the entire route of their migration. Whether these declines are entirely the result of fishing effort is not always easily determined.

Rate of exploitation.—Commercial recoveries from the tagging at Point Adolphus and at Pleasant Island showed a surprisingly uniform increase in the percentage recovery from each day of tagging as the date of the tagging approached the opening date of the fishing season on August 15. Regression lines obtained by plotting percentage recovery on the date of tagging at Point Adolphus and Pleasant Island are almost identical, with slopes of 3.547 and 3.630, respectively. The corresponding correlation coefficients of 0.963 and 0.974 are highly significant. Those fish tagged just before the opening of the season are exposed the longest and have the highest rate of recapture; those tagged earlier are progressively less likely to be taken since some will have had time to migrate into waters outside the fishing area.

The length of time a particular race of salmon is subject to capture by the fishery is determined by the distance and the speed it travels to reach its parent stream. The maximum elapsed time (from

date of tagging to date of capture) that we have on record for the 1950 season is 40 days, and the greatest distance is a recovery from Olive Cove (Etolin Island), about 225 miles from point of tagging.

Tagging in Icy Strait during the fishing season was limited to four experiments conducted between August 27 and September 5. Recoveries from each showed similar straight-line relations to dates of tagging. The percentage recovery decreased as the date of tagging approached the closing date of the fishing season. There was comparatively little decline in the percentage recovery between the tagging of August 14 and that of August 27. Recoveries from the Pleasant Island tagging of August 14 amounted to 64.7 percent. When tagging was resumed on August 27, recoveries amounted to 55.2 percent—a drop of slightly less than 10 percent.

On the basis of recoveries from the tagging of August 14, we assume that fishing mortality in salmon available to the fishery in Icy Strait during the fishing period probably remained between 60 and 65 percent, dropping below this rate only during the last few days of the commercial season. This estimate is based on the assumption that little or no tagging mortality occurred, that all tags recovered were returned, and that few tags were lost or shed. If any of these factors are of greater consequence than assumed, then our estimate of 60 to 65 percent is minimal.

Returns from Upper Chatham Strait tagging

A list of the returns from the tagging at Cube Point and False Bay (fig. 6) is given in table 4. Although the pattern of migration from these Chatham Strait points indicates a continuation of the migration route exhibited by fish tagged in Icy Strait, returns from the Chatham experiments also show a northward migration toward Mansfield Peninsula and Icy Strait. Of the 1,805 individuals tagged, 770 (42.6 percent) were recovered. Of this recovery, 112, or 14.5 percent, were recovered north of the point of tagging. If the percentage recovery to the north of the point of tagging were weighted to compensate for unequal amounts of fishing effort to the north and south (25 traps operated north of the point of tagging and 42 to the south), this figure would approach 20 percent. As well as we were able to determine, all recoveries listed under "Chatham Strait—General" were made south of the point of tagging. If some of these were possibly taken north of the tagging points, the proportion moving northward could have been even higher than 20 percent. The northward movement shown by the recoveries corresponds with earlier findings of tagging at Parker Point in 1926 and 1927 (Rich and Suomela 1927, Rich and Morton 1929).

Returns from the Upper Chatham Strait tagging of August 20 show that a considerably higher recovery was made in the Frederick Sound-Stephens Passage area than resulted from the nearest comparable tagging in Icy Strait on August 14 (9.0 to 3.1 percent). This is readily explained by the fact that the route from Icy Strait to Frederick Sound and Stephens Passage is longer and makes the fish pass more gear than does the route from Chatham Strait. Thus, a fish tagged in Icy Strait would be expected to have less chance of reaching Frederick Sound than one tagged in Chatham Strait.

STREAM RECOVERIES

Recovery effort

Stream recovery of tagged salmon is one of the means by which the researcher can differentiate the specific races that comprise the runs in any one major fishing area at any one time. With this phase of the study in mind, our crew put considerable effort into the survey of streams that were believed to be likely contributors to the Icy Strait run. Although only a portion of the total potential spawning area could be covered, the surveys were extensive enough to explore all possible areas of major distribution of salmon tagged in the Icy Strait area.

In some areas, effective coverage was not always achieved because of the impossibility of timing all the surveys to coincide with periods of peak escapement in the various stream systems. For example, in our surveys of the west coast of Chichagof Island during the latter part of August, eight streams were examined without revealing a single tagged salmon. Unfortunately, only four of these streams contained pink salmon at this time and these only in limited number. Presumably, the visits were several weeks in advance of the peak escapement into this area. However, if the negative evidence obtained from these surveys is combined with the limited tag recovery

TABLE 4.—*Commercial recoveries of pink salmon tagged in Upper Chatham Strait, 1950*

Recovered in—	Recoveries of fish tagged at—																			Total recoveries (1,805 tagged)
	Cube Point Aug. 20 (1,448 tagged)				False Bay Aug. 21 (33 tagged)				Cube Point Aug. 30 (125 tagged)				Cube Point Sept. 3 (185 tagged)				False Bay Sept. 3 (14 tagged)			
	Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)			Number recovered	Elapsed time (days)		
		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean		Min.	Max.	Mean	
Icy Strait area:																					
Gull Cove	2			?																	2
Point Gustavus	1			?					1			1									2
Eagle Point	3	3	9	6																	3
Excursion Inlet	9	3	12	7	2	12	17	15	5	2	10	5									16
Spasski	2			5	1			4													3
Icy Strait—General	8	1	12	6																	8
Total	25 (1.7%)				3 (9.1%)				6 (4.8%)				0 (0%)				0 (0%)				34 (1.9%)
Lynn Canal area:																					
Naked Island	6	2	18	7	1			9	1			3									8
Funter Bay	2			18																	2
Total	8 (0.6%)				1 (3.0%)				1 (0.8%)				0 (0%)				0 (0%)				10 (0.6%)
Upper Chatham Strait area:																					
Hawk Inlet to Funter	54	1	6	1	1			?	2			3									57
Square Cove	10	1	2	1	1			?													11
Point Hepburn	49	2	9	4	1			4	5	1	3	1									55
Gypsum					1			0					1			4					2
Fishery Point	29	1	4	1																	29
Marble Bluff	32	2	9	4																	32
Marble Cove	29			?																	29
Basket Bay	1			1																	1
False Bay	9	1	9	5									1			5					10
Peninsula Point	3			2					1			1									4
South Passage Point	6	1	5	3																	6
Point Thatcher	8			6					3	1	2	1									11
Point Caution	53	1	6	3																	53
Hood Bay	16	11	13	12					4	9	10	10	5			6					25
Distant Point	11	4	9	7																	11
Killisnoo Island	18	1	21	8					1			11									19
Point Turbot	4	3	6	4																	4
Eagle Point	2			1																	2
Chaik Bay	16	3	13	9					1			2	1			?					18
Wilson Cove	8			5																	8
Chatham Strait—General	110	1	20	4	2	1	4	2	6	1	10	4									118
Total	468 (32.3%)				6 (18.2%)				23 (18.4%)				8 (4.3%)				0 (0%)				505 (28.0%)
Lower Chatham Strait area:																					
Kingsmill to Point Ellis	36	1	20	4									1			6					37
Red Bluff Bay	8	2	9	6																	8
Tebenkof Bay	7			10									1			?					8
Gedney Harbor	4	3	8	6																	4
Total	55 (3.8%)				0 (0%)				0 (0%)				2 (1.1%)				0 (0%)				57 (3.1%)
Frederick Sound–Stephens Passage area:																					
Point Brightman	10	1	13	8																	10
Point Cornwallis	1			10																	1
Deepwater Point	27	1	6	3									1			?					28
Carroll Island	17	3	4	3																	17
Herring Bay	12	2	19	6									1			6					13
Saginaw Bay	3			4																	3
Pybus Bay and vicinity	41	1	13	5																	41
Point McCartney	4	1	2	2																	4
Point Napean	11	3	6	3																	11
Cape Bendel	4	2	6	4																	4
Security Bay									1			?									1
Frederick Sound—General													1			4					1
Total	130 (9.0%)				0 (0%)				1 (0.8%)				3 (1.6%)				0 (0%)				134 (7.4%)
Other areas:																					
Hoonah Sound	4	10	11	10																	4
Affleck Canal	1			10																	1
Slocum Arm	1			4																	1
Unknown	22												2								24
Total	28 (1.9%)				0 (0%)				0 (0%)				2 (1.1%)				0 (0%)				30 (1.6%)
Grand total	714 (49.3%)				10 (30.3%)				31 (24.8%)				15 (8.1%)				0 (0%)				770 (42.6%)

made by purse-seine vessels operating in this area, the data do indicate there is little movement of pink salmon from Icy Strait to streams on the ocean side of Chichagof Island.

Survey crews of the *Heron* and *Sablefish* examined 98 streams. Field parties of the Fisheries Research Institute (1950) covered an additional 15 streams while making their annual escapement counts in the area. Other Service personnel and local residents participated in stream recovery and gave particularly close coverage to three streams—Humpback Creek, Game Creek, and Mole River. Altogether, approximately 125 streams were checked for tagged salmon in that part of Southeastern Alaska north of Sumner Strait. Table 5 gives a complete list of all streams covered by our survey parties and the relative amount of effort expended in this phase of the 1950 program.

Many of the streams in Southeastern Alaska, unnamed or with several local names, are identified by a numbering system devised by the Fish and Wildlife Service several years ago. Wherever possible, we have used these numbers to designate our surveys. These stream locations and numbers are shown in figure 1.

While an extensive survey of streams in Sumner Strait and areas to the southward was not undertaken by our group, many streams in the southern portion of Southeastern Alaska were inspected by Service personnel and Fisheries Research Institute workers making annual escapement counts. These surveys disclosed that there was no appreciable movement of tagged salmon into the streams of this area.

Recovery techniques

Our stream-survey crews tried several implements to capture tagged salmon in streams. Among these were the rifle, dip net, gaff, and spear. A spear made of three shark hooks welded together in pitchfork fashion and fastened to a pole approximately 10 feet long proved to be by far the most efficient tool used. A similar spear had previously been used by workers of the Fisheries Research Institute and found to be most satisfactory for the work.

We found that the ultimate success of a stream tag-recovery program is dependent upon a number of factors. Some of the more important are size of stream, weather, character of stream, individual adeptness in the capture of fish, time spent in capturing fish, condition of tagged fish, and time of stream survey.

TABLE 5.—*Stream tag recoveries by survey crews of the* Heron *and* Sablefish

Area and stream	Date of survey	Man-hours [1]	Pinks found [2]	Tags noted	Tags recovered	Distance covered
Icy Strait area:						*Miles*
Idaho Inlet, No. 12A	8/25	1.00	0	0	0	½
Idaho Inlet, No. 12	8/25	1.00	0	0	0	¾
Mud Bay, No. 14	8/26	1.50	0	0	0	1½
Neka Bay, stream on right side	8/31	.50	0	0	0	⅓
Neka Bay, No. 18	8/31	1.50	300	10	2	¼
Do	9/1	4.00	300	8	1	¼
Port Frederick, No. 17B	8/31	.50	4	1	1	⅓
Seagull Creek, No. 17A	8/31	3.00	200	11	10	¼
Do	8/31	1.50	150	7	4	½
Spasski Creek, No. 20	8/16	3.00	75	4	0	1¼
Do	8/26	1.50	15	1	0	¼
Do	8/29	3.50	269	12	5	1½
Game Creek, No. 16	8/29	6.00	424	6	0	2½
Whitestone Harbor, west stream	8/16	2.00	0	0	0	½
Whitestone Harbor, south stream	8/16	2.00	20	0	0	1
Do	8/29	2.50	117	9	1	1¼
Point Carolus, stream 1 mi. inside	9/3	1.50	0	0	0	1¼
Homeshore, No. 1	9/2	5.00	600	40	11	¼
Do	9/5	6.00	600	30	15	⅓
Homeshore, stream right of No. 1	9/2	3.50	100	11	8	⅓
Do	9/5	1.00	100	4	1	⅓
Homeshore, No. 1B	9/5	.83	0	0	0	⅓
Total		52.83		154	59	15¾
Lynn Canal area:						
Funter Bay, No. 78	9/6	2.00	32	3	2	⅓
Funter Bay, small stream right of No. 78	9/6	.50	5	0	0	¼
Funter Bay, Coot Cove Creek, No. 80	9/6	.50	0	0	0	⅛
Point Howard, ⅓ mi. left of No. 3A	9/6	.25	0	0	0	¼
Point Howard, No. 3A	9/6	1.00	70	6	3	¼
Howard Bay, Cove Creek, No. 3	9/5	1.33	360	6	4	½
Total		5.58		15	9	1¾
Upper Chatham Strait area:						
False Bay, No. 77	8/17	2.00	30	0	0	1
Freshwater Bay, stream head of bay	8/30	1.83	59	4	0	¾
Freshwater Bay, No. 4, head of bay	8/17	2.66	1,270	3	0	1¼
Sitkoh Bay, No. 19	9/18	2.00	75	0	0	1
Sitkoh Bay, No. 20	9/18	5.00	1,606	12	9	2
Greens Creek, No. 44, Hawk Inlet	8/16	1.16	0	0	0	¾
Wheeler Creek, Game Cove, No. 45	8/16	2.16	76	0	0	¾
Hood Bay, No. 54	9/16	1.83	250	3	1	1
Hood Bay, No. 56	9/17	2.16	1,432	12	1	1
Chalk Bay, No. 57	9/17	2.50	1,342	11	6	1
Total		23.30		45	17	10½
Tenakee Inlet area:						
Corner Bay, east stream No. 14A	8/17	2.25	4	0	0	1¼
Do	8/31	2.16	13	1	0	¾
Kadashan Bay, east side of bay	8/31	3.33	621	3	3	1½
Kadashan Bay, right side of bay	8/17	.66	18	0	0	⅓
Seal Bay, No. 11	8/18	3.33	7,940	0	0	¾
Long Bay, No. 10	8/18	4.66	12,200	1	0	1⅞
Do	9/1	3.50	1,321	5	0	1¼
East Goose Bay, No. 9A	8/18	2.00	271	0	0	1
Goose Bay, No. 9	8/18	2.83	233	0	0	1½
Tenakee Inlet, stream at head	9/1	1.33	0	0	0	¾
Total		26.05		10	3	11

See footnote at end of table.

TABLE 5.—*Stream tag recoveries by survey crews of the* Heron *and* Sablefish—Continued

Area and stream	Date of survey	Man-hours [1]	Pinks found [2]	Tags noted	Tags recovered	Distance covered
Frederick Sound–Stephens Passage area:						
						Miles
Barlow Cove, left side, end of cove	9/6	0.83	2	0	0	½
Barlow Cove, right side, end of cove	9/6	.50	0	0	0	¼
Barlow Cove, ½ mile from end, right side	9/6	.50	0	0	0	⅓
Seymour Canal, No. 11	9/10	.83	0	0	0	⅓
Seymour Canal, No. 13	9/10	2.33	2,050	29	19	½
Seymour Canal, ⅛ mi. south of No. 13	9/10	.66	44	0	0	⅓
Windfall Harbor, 1½ mile North of No. 14	9/10	1.33	108	4	4	⅓
Windfall Harbor, No. 14	9/9	3.50	105	3	1	1
Mole River, No. 15	9/9	4.00	1,219	25	20	1
Mole Harbor, No. 15A	9/11	.33	0	0	0	⅛
Gambier Bay, ½ mi. north of No. 17	9/11	1.33	180	5	5	½
Gambier Bay, No. 17	9/11	1.33	182	4	4	¼
Gambier Bay, No. 19	9/12	1.66	103	1	0	1
Pybus Bay, No. 21	9/12	1.33	300	2	0	¾
Pybus Bay, No. 20	9/12	2.00	383	5	1	1
Pybus Bay, No. 22	9/12	0.83	132	1	0	¾
Pybus Bay, No. 24	9/13	0.66	7	0	0	¼
Bay South of Pybus Bay, No. 25	9/14	4.50	234	2	1	2
Eliza Harbor, No. 26	9/14	0.50	0	0	0	⅕
Eliza Harbor, stream bet. Nos. 26 and 27	9/14	1.16	204	2	0	⅔
Eliza Harbor, No. 27	9/14	0.66	5	0	0	¼
Eliza Harbor, No. 28	9/14	0.83	10	0	0	½
Limestone Inlet, No. 1	9/11	6.00	2,000	40	21	½
Windham Bay, No. 2	9/12	4.00	3,250	30	18	1
Windham Bay, stream opp. No. 2 at 150°	9/12	2.00	3,600	15	11	¾
Hobart Bay, No. 4A	9/13	2.00	285	6	3	1¼
Hobart Bay, stream right of 4A	9/13	0.50	0	0	0	¼
Port Houghton, No. 5	9/13 9/14	8.00	5,200	24	21	4½
Portage Bay, left stream	9/21	1.00	0	0	0	⅜
Portage Bay, right corner	9/21	0.66	0	0	0	¼
Saginaw Bay, No. 38 (?)	9/18	1.33	113	0	0	¾
Saginaw Bay, main stream No. 38A or 39	9/18	2.16	1,246	6	3	1¼
Security Bay, No. 40 (?)	9/19	1.16	773	0	0	½
Security Bay, main stream east end	9/20	1.33	196	0	0	¾
Security Bay, No. 40A (?)	9/19	1.00	108	1	0	½
Total		62.74		205	132	25⅜
Peril Strait area:						
Patterson Bay, No. 26	9/16	6.00	1,510	8	4	½
Patterson Bay, No. 26A	9/16	0.50	35	0	0	½
Ushk Bay, No. 27	8/22	1.50	4	0	0	¾
Ushk Bay, No. 28	8/22	1.50	0	0	0	1
Poison Cove, No. 29	8/22	1.66	0	0	0	½
Deep Bay, No. 30	9/16	2.00	82	1	0	1
Appleton Cove, No. 34A	9/17	1.00	25	0	0	½
Rodman Bay, No. 34	9/17	0.50	2	0	0	¼
Rodman Bay, No. 33A	9/17	4.00	2,515	12	5	¾
Fish Bay, No. 32	9/15	0.50	260	0	0	½
Fish Bay, No. 31	9/15	0.50	40	0	0	½
Total		19.66		21	9	6¾
West coast Chichagof Island:						
Lisianski Inlet, No. 52	8/24	2.00	130	0	0	1¼
Stag Bay, No. 50	8/24	1.50	7	0	0	½
Goulding Harbor, stream at head	8/24	2.50	0	0	0	¾
Black Bay, No. 45	8/24	1.50	0	0	0	¾
Black River, No. 44	8/24	2.50	574	0	0	1⅓
Waterfall Cove, No. 40	8/23	1.00	117	0	0	¾
Flat Cove, Slocum Arm	8/23	0.73	0	0	0	⅕
Slocum Arm, No. 37	8/23	2.00	0	0	0	½
Total		13.73		0	0	6
Other streams:						
Petersburg Creek	9/22	4.00	0	0	0	1¼
Stream left of mouth of Petersburg Creek	9/22	1.00	0	0	0	¼
Stream on right, near mouth of Petersburg Creek	9/22	1.00	0	0	0	¼
St. John Harbor (right corner) Zarembo Island	9/23	2.00	6	0	0	½
St. John Harbor (left corner) Zarembo Island	9/23	1.00	0	0	0	½
Total		9.00		0	0	2¾
Grand total		212.89		450	229	80

[1] Includes only time of upstream survey where no tags were noted; time spent recovering tags is included.
[2] Includes both live and dead fish.

The typical stream in Southeastern Alaska is generally one that is easily waded in the summer months and has numerous shallow riffles in which the fish are readily accessible. Occasionally we did encounter large streams containing a number of spawners that were difficult to approach and capture. Weather also affects the completeness of recovery—bright days are generally the best for observation purposes. Heavy rains result in very poor recovery conditions because of reduced visibility and high water. Some streams may have a series of deep holes in which most of the salmon lie preparatory to moving into the shallower spawning riffles. Recovery of tagged fish in these large deep pools is almost impossible.

The time spent in searching a stream obviously affects the total recovery of tags in that stream. Since the magnitude of the area we had to survey precluded any possibility of spending more than half a day on one stream, we frequently recovered less than 50 percent of the tags sighted in the larger streams.

The general physical condition of the salmon at time of survey has some bearing on the number of recoveries made. Green fish, those just in from the sea, are far more difficult to capture than are the spawners and spent fish. Approximately a sixth of all tags recovered were taken from dead fish. Here the recovery was largely the result of keen observation on the part of the survey crews, involving a thorough examination of all carcasses in the stream bed and on high ground.

The most important of all the factors affecting the success of stream recovery of tagged salmon is the time of the survey. This should be shortly after the peak of spawning activity, since it is then that the majority of individuals migrating to a particular stream are available. In practice, time

limitations made it impossible for our crews to visit all streams at the most desirable time.

In evaluating these factors it must be remembered that while the number of tags recovered in any one stream may be evidence of the stream's importance to the tagged population, a comparison between streams should be made with caution, since the recoveries are closely associated with the effort placed on each stream. Thus, the four streams showing the highest number of recoveries—Humpback Creek, Game Creek, Chaik Bay stream No. 57, and Mole River—were also subject to the most intensive observation. Humpback Creek has a Fish and Wildlife Service weir near its mouth, permitting daily observation. Game Creek, a short distance from the village of Hoonah, was under constant surveillance by the local native population. Chaik Bay No. 57 and Mole River recoveries were largely the result of an intensive coverage by local residents.

Returns from Icy Strait tagging

Tables 6 and 7 summarize, by date of tagging, all stream recoveries made from those fish released at Pleasant Island and Point Adolphus. Although our initial experiments were in progress fully 3 weeks before the start of the general fishing season, the presence of schools of pink salmon in the vicinity of streams with early runs of salmon in Tenakee Inlet and Stephens Passage indicated that some fish were already approaching these spawning grounds at the time our experiments were commencing. This was particularly true of the early runs in Tenakee Inlet. Stream-survey reports of the Fisheries Research Institute reveal that Seal Bay, Kadashan Bay, and Long Bay streams all contained pink salmon at the time tagging operations were initiated in late July. By mid-August the escapement into these streams was very near its peak; yet among the thousands of fish observed at this time only one tag was seen by our survey parties. A few tags were eventually recovered in this area, but in relation to the size of the escapement it is obvious that our experiments included only a minor portion of the early Tenakee races. Apparently most of these pink salmon either passed through Icy Strait before July 25 or made their way to Tenakee Inlet through channels other than Icy Strait.

A similar situation prevailed in some of the early-run streams of the Stephens Passage area. There, the number of recoveries indicates that our tagging included a far greater portion of the runs than was evident in Tenakee Inlet. Returns from Port Houghton stream No. 5, for example, cover a tagging period from July 25 to August 13. Similarly, returns from Limestone Creek cover a period from July 29 to August 13. Records on Mole River in Seymour Canal show recoveries from July 26 to August 13. All these streams were reported to contain some pink salmon at the time tagging started, indicating a considerable chronological spread in the migration to these spawning grounds.

The distribution of stream recoveries, when recovery on a percentage basis by area is discounted, is very similar to that shown by the commercial recoveries in tables 1 and 2. Virtually every area in which commercial recoveries were made is similarly represented in the tables listing stream recoveries. Only on the west coast of Chichagof Island, where a few commercial recoveries were made, is there an absence of stream recoveries. Possible explanation for this has been given previously in the text.

Returns from Upper Chatham Strait tagging

It is apparent from an examination of table 8 that the majority of fish tagged in Upper Chatham Strait from August 20 to September 3 were bound for streams in Chatham Strait. The percentage destined for Stephens Passage and Frederick Sound may have been slightly higher than is shown by the stream returns, since these races were subject to fishing pressure over a longer distance than those bound for the Chatham Strait area.

The stream recoveries follow the pattern shown by the commercial recoveries in table 4 with one possible exception: while some commercial recoveries were made in Icy Strait, no stream recoveries were made in this area. A possible explanation would be that the movement into Icy Strait was not great (approximately 2 percent commercial recovery), and that stream-recovery effort in this area during September was not sufficient to locate the few tags which may have reached the streams.

Additional stream observations of tagged fish

Tagged salmon were recovered in 61 streams in an area extending from Taiya River at Skagway to Snake Creek in Olive Cove, Etolin Island.

TABLE 6.—*Stream recoveries of pink salmon tagged at Pleasant Island, 1950*

Recovered in—	Number recovered from tagging of—																								Total recoveries (8,278 tagged)
	July 27 (23 tagged)	July 28 (27 tagged)	July 30 (361 tagged)	July 31 (480 tagged)	Aug. 1 (99 tagged)	Aug. 2 (79 tagged)	Aug. 3 (258 tagged)	Aug. 4 (115 tagged)	Aug. 5 (729 tagged)	Aug. 6 (572 tagged)	Aug. 7 (811 tagged)	Aug. 8 (290 tagged)	Aug. 9 (202 tagged)	Aug. 10 (399 tagged)	Aug. 11 (380 tagged)	Aug. 12 (942 tagged)	Aug. 13 (994 tagged)	Aug. 14 (739 tagged)	Aug. 27 (96 tagged)	Aug. 30 (306 tagged)	Sept. 5 (376 tagged)	
Icy Strait area:																									
Humpback Creek			3	6	1		2		6	5	5	3		2	2	3	1	2							41
Game Creek			1	2			2		5	1	2	1		2	2	5	2	2		7	1				35
Homeshore, No. 1			1	1					2	1	3		2		1	2									13
Homeshore right of No. 1							1		1	1	1			1	1	1		1							6
Seagull Creek, No. 17A			2						1	2	2						1								6
Spasski Creek, No. 20				1			1			1	1														4
Neka Bay, No. 18									1																1
Idaho Inlet, No. 12											1														1
Port Frederick, No. 17B				1																					1
Whitestone Harbor, south stream																									1
Total			7	11	1		6		17	11	15	4	3	5	6	11	4	5		7	1				114
Lynn Canal area:																									
Howard Cove, No. 3									1	1	1					1									3
Chilkoot River															1	1	1								2
Funter Bay, No. 78													1					1							2
Howard Cove, No. 3A									1																1
Chilkat River																									10
Total									2	1	1		1		1	2	1	1							
Upper Chatham Strait area:																									
South Arm Hood Bay							1				3					1	1			1					7
Favorite Bay Stream										1	2			2		1	2								8
Chaik Bay, No. 57																1	3								4
Sitkoh Bay, No. 20																				2	1	1			4
North Arm Hood Bay, Nos. 53 or 54					1					1							1					1			5
Bear Creek, Hood Bay																1	1				1	1			2
Clear River, Kelp Bay																									2
Wilson Cove, No. 60																					1				1
Total					1		1			2	5			2		5	8			3	3	3			33
South Chatham Strait area: Lover's Cove stream																	1								1
Frederick Sound–Stephens Passage area:																									
Mole River, No. 15			5	3			2	2	6	2	7	2		1		4									34
Limestone Creek, No. 1			2	4	1	1	1			2	2					1									14
Port Houghton, No. 5				1			1	3	2	2	1						1								11
Seymour Canal, No. 13			1							2	4	2					1								10
Windham Bay, No. 2									3							1	2	1	1	1					9
Saginaw Bay, No. 39															1			2			1				4
Security Bay, No. 40															1	1	1			1					4
Stream, 150° opposite Windham Bay, No. 2							1		1	1	2						1								5
Hobart Bay, No. 4A			1		1						1					1									2
Speel River, Port Snettisham																1									1
Gambier Bay, ½ mile north of No. 17																									1
Lemon Creek, Juneau			1														1								1
Port Houghton, No. 6																	1								1
Pybus Bay, No. 20																1									1
Point McCartney stream																									
Windfall Harbor, 1½ m. north of No. 14																									
Total			10	8	2	1	5	5	12	9	17	4		1	2	10	8	3	1	2	1				101

Tenakee Inlet area:																															
Eaton Creek	1	1	1		1													1												5
Crab Bay, No. 13A			3																											3
Kadashan Bay, No. 14			1	1												1														3
Seal Bay, No. 11		1	1																											2
Long Bay, No. 10		1																												1
Total	1	3	6	1	1											1		1												14
	1 (4.3%)	0 (0%)	20 (5.5%)	25 (5.2%)	5 (5.0%)	2 (2.5%)	12 (4.6%)	5 (4.3%)	32 (4.4%)	24 (4.2%)	38 (4.7%)	9 (3.1%)	5 (2.5%)	11 (2.7%)	9 (2.4%)	30 (3.2%)	23 (2.3%)	9 (1.2%)	4 (4.2%)	12 (3.9%)	5 (1.3%)	281 (3.4%)								
Peril Strait area:																															
Patterson Bay, No. 26 creek														1		1														2
Rodman Bay, No. 33 creek										1							1													2
Paradise Flats creek, Saook, No. 35																														1
Total										1				1		1	1													5
Other streams:																															
Petersburg Creek														1																1
Snake Creek, Olive Cove Weir, Etolin Island											1																			1
Twin Creek, Mitkof Island, Wrangell Narrows								1																						1
Total								1				1		1																3
Grand total	1 (4.3%)	0 (0%)	20 (5.5%)	25 (5.2%)	5 (5.0%)	2 (2.5%)	12 (4.6%)	5 (4.3%)	32 (4.4%)	24 (4.2%)	38 (4.7%)	9 (3.1%)	5 (2.5%)	11 (2.7%)	9 (2.4%)	30 (3.2%)	23 (2.3%)	9 (1.2%)	4 (4.2%)	12 (3.9%)	5 (1.3%)	281 (3.4%)								

TABLE 7.—*Stream recoveries of pink salmon tagged at Point Adolphus, 1950*

Recovered in-	Number recovered from tagging of—																				Total recoveries (7,317 tagged [2])
	July 25 (29 tagged)	July 26 (53 tagged)	July 27 (28 tagged)	July 28 (48 tagged)	July 29 (26 tagged)	July 31 (39 tagged)	Aug. 2 (38 tagged)	Aug. 3 (526 tagged)	Aug. 4 (458 tagged)	Aug. 5 (133 tagged)	Aug. 6 (525 tagged)	Aug. 7 (335 tagged)	Aug. 8 (905 tagged)	Aug. 9 (149 tagged)	Aug. 10 (1,110 tagged)	Aug. 11 (623 tagged)	Aug. 12 (996 tagged)	Aug. 13 (667 tagged)	Aug. 14 (344 tagged)	Sept. 4 (284 tagged [1])	
Icy Strait area:																					
Humpback Creek					1			4	1	2	4	5	12	1	5	2	2	1			40
Game Creek								4	2		3	2	6	2	3			1			23
Seagull Creek, No. 17A									1		3		2			1			1		8
Neka Bay, No. 18									1		1		2								4
Homeshore, No. 1								1			2		1		3	3	1	2			13
Spasski Creek, No. 20										1					2						3
Stream right of No. 1												1	1		1				1		4
Chicken Creek																				1	1
Total					1			9	5	3	13	8	24	3	14	6	3	4	2	1	96
Lynn Canal area:																					
Point Howard, No. 3A											1										1
Howard Cove, No. 3															1						1
Chilkoot River																	2	1			3
Total											1				1		2	1			5
Upper Chatham Strait area:																					
South arm Hood Bay, No. 55								2		1			1		3	1	6	1			15
Clear River, Kelp Bay								1	1						1	1					3
Bear Creek, Hood Bay												1					1	1			3
Chaik Bay, No. 57													1		1		4			1	6
North arm Hood Bay, Nos. 53 or 54													3		4	2	1	1	1		5
Favorite Bay stream															1		2		3		14
Calin Creek, Hood Bay																					1
Sitkoh Bay, No. 20																	2				2
Total								3	1	1		1	5		10	4	16	3	4	1	49
South Chatham Strait area: Lover's Cove Stream							1										1			1	3
Frederick Sound-Stephens Passage area:																					
Port Houghton, No. 6	1														3	1	1				1
Port Houghton, No. 5	1			1				2	2						3	1	1	2			11
Mole River, No. 15		1			1			4	3	1	4	2	6		3	1	1	1			28
Limestone Creek, No. 1								1	1	1	1		1	1	2	2	1	1			13
Windham Bay, No. 2													1		1		1	1	1		5
Stream 150° opposite No. 2								1	1	1		1	1		1						6
Windfall Harbor, No. 14								1													1
Seymour Canal, No. 13		1						2			1			1	1	1					7
Gambier Bay, No. 17									1				1		1	1					4
Gambier Bay, ½ mile north of No. 17															2			1	1		4
Security Bay, No. 40													3								3
Windfall Harbor, 1½ miles north of No. 14													1			1	1				3
Hobart Bay, No. 4A															1						1
Stream right of Sweetheart Lake Creek																	1				1
Saginaw Bay, No. 39																	1		1		2
Total	2	2		1	1			11	8	3	6	3	14	2	15	7	7	5	3		90
Tenakee Inlet area:																					
Kadashan Bay, No. 14					1			1				1	1								4
Seal Bay, No. 11								2													2
Crab Bay, No. 13A								1													1
Eaton Creek								1													1
Total				1				5				1	1								8

Peril Strait area:																						
Rodman Creek, No. 33									1			2			1	1		1	1			6
Patterson Bay, No. 26																	1	1				2
Poison Cove, No. 29															1							1
Total									1			2			2	1	1	2				9
Other streams:																						
Stikine River								1								1						2
Petersburg Creek											1											1
Total								1			1					1						3
Grand total	2 (6.9%)	2 (3.8%)	0 (0%)	2 (4.2%)	2 (7.7%)	0 (0%)	1 (2.6%)	29 (5.5%)	15 (3.3%)	7 (5.3%)	21 (4.0%)	15 (4.5%)	44 (4.9%)	5 (3.4%)	42 (3.8%)	19 (3.0%)	30 (3.0%)	15 (2.2%)	9 (2.6%)	3 (1.1%)	263 (3.6%)	

[1] Includes 80 fish tagged at Point Adolphus trap No. 6 of the Columbia River Packers Association.
[2] Includes 2 fish tagged August 1.

TABLE 8.—*Stream recoveries of pink salmon tagged in Upper Chatham Strait, 1950*

[Column heading indicates tagging location, date, and number tagged]

Recovered in—	Cube Point Aug. 20 (1,448)	Cube Point Aug. 30 (125)	Cube Point Sept. 3 (185)	False Bay Aug. 21 (33)	False Bay Sept. 3 (14)	Total recoveries (1,805 tagged)
Lynn Canal area: Dyea River, Skagway	1					1
Upper Chatham Strait area:						
Chaik Bay, No. 57	33	1				34
Favorite Bay stream	2					2
Hood Bay, No. 55	8					8
Sitkoh Bay, No. 20	2		1			3
Hood Bay, No. 56	1					1
Fishery Creek, No. 48		1				1
Wilson Cove, No. 60			1		1	2
Bear Creek, Hood Bay			1			1
Total	46	2	3		1	52
South Chatham Strait area: Lover's Cove stream	2	1				3
Frederick Sound–Stephens Passage area:						
Mole River, No. 15	3					3
Security Bay, No. 40	1					1
Windham Bay, No. 2	5					5
Seymour Canal, No. 13	2					2
Bay S. of Pybus, No. 25	1					1
Saginaw Bay, No. 39	2					2
Total	14					14
Peril Strait area: Rodman Creek, No. 33	1			1		2
Grand total	64 (4.4%)	3 (2.4%)	3 (1.6%)	1 (3.0%)	1 (7.1%)	72 (4.0%)

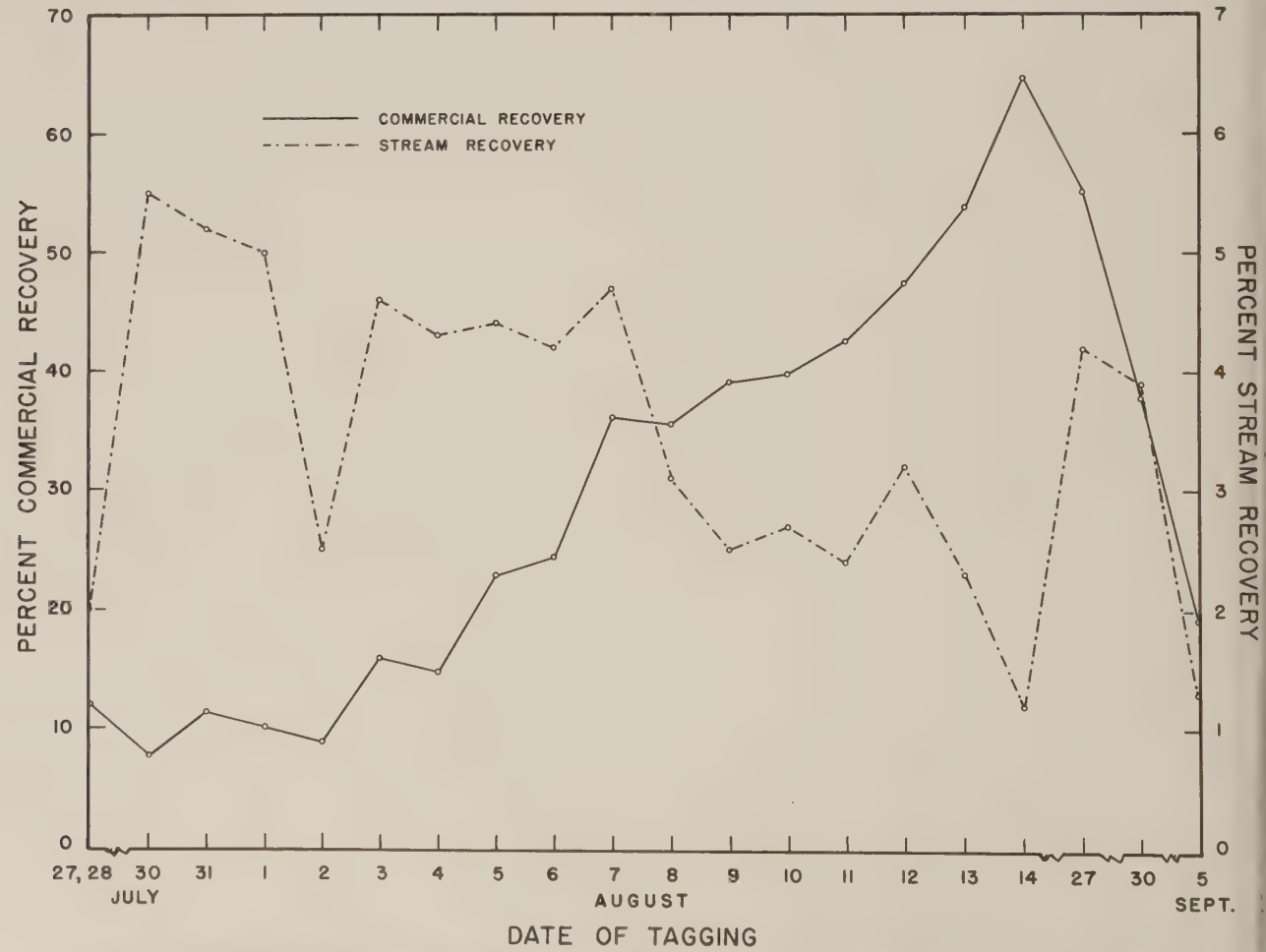

FIGURE 9.—Pleasant Island tagging, 1950: Comparison of stream and commercial recoveries, by date of tagging

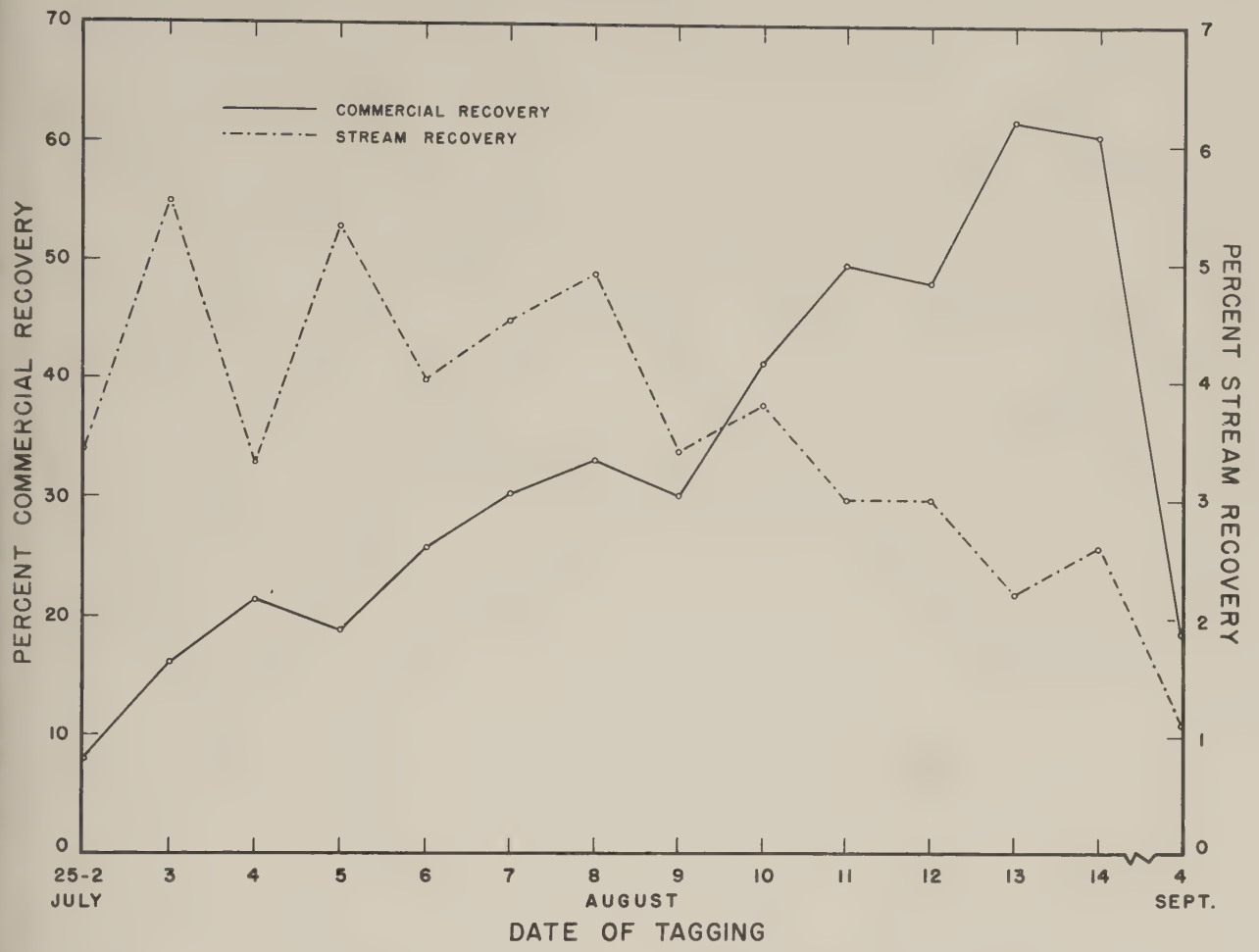

FIGURE 10.—Point Adolphus tagging, 1950: Comparison of stream and commercial recoveries, by date of tagging.

In addition, tagged fish were positively identified in 13 other streams where capture was not possible. These streams, and the dates on which tagged salmon were observed, were as follows:

Stream at head of Freshwater Bay	Aug. 17 and 30
West stream, Corner Bay, Tenakee Inlet	Aug. 31
Gambier Bay, No. 19	Sept. 12
Pybus Bay, No. 22	Sept. 12
Pybus Bay, No. 21	Sept. 12
Eliza Harbor, between No. 26 and No. 27	Sept. 14
Deep Bay, No. 30, Peril Strait	Sept. 16
Tunehean Creek, Kupreanof Island	Aug. 23
Jackson Hole stream, Kuiu Island	Aug. 23
Elena Bay, No. 44C	Sept. 2
Pleasant Harbor, No. 16	Aug. 27
Shuck River	Aug. 22
Gambier Bay, No. 18	Aug. 29

There is no way of determining the exact point at which these fish were tagged, but by process of elimination we may assume that virtually all those observed in August were tagged in Icy Strait. The tagged fish observed in September may have been tagged either in Icy Strait or in Upper Chatham Strait.

Comparison of stream and commercial recovery with respect to date of tagging

About 3.5 percent of all fish tagged at Pleasant Island and Point Adolphus were recovered in streams, the recovery ranging from approximately 5 to 7 percent on fish tagged at the beginning of the experiment to about 1 to 2 percent on those tagged just before the opening of commercial fishing. As might be expected, the stream recovery decreases as the corresponding commercial recovery increases (figs. 9 and 10). The noticeable drop in stream recoveries of fish tagged on the last days of the experiment was probably caused by adverse weather conditions which hampered stream-recovery efforts. It is also possible that a number of fish tagged in September were not yet in the streams at the time our recovery surveys ended on September 23.

Time of passage of major geographical races in Icy Strait

We have previously mentioned the similarity of the commercial returns from the two Icy Strait tagging points. Examination of the stream-recovery data in tables 6 and 7 likewise showed an apparent agreement in the corresponding stream returns from these tagging points. Applying the Brandt-Snedecor method to the data, we found that in general there were no significant differences in the returns from the two points of tagging among the various recovery localities: Icy Strait, Lynn Canal, Tenakee Inlet, Upper Chatham Strait, Peril Strait, Frederick Sound, and Stephens Passage (chi square=10.23, d.f. 6, $0.1<P<0.2$). In view of this suggested homogeneity of returns, the Point Adolphus and Pleasant Island returns were combined and are given in table 9. The combination of this material is particularly advantageous since it yields a total of 544 stream recoveries upon which to base our inferences on the presence of the various races in Icy Strait according to time.

A graphic presentation of the time of occurrence of the major geographical groups of races in Icy Strait is shown in figure 11. The total stream recoveries for each date of tagging by area of recovery are taken from table 9. One of the more important features suggested by this graph is that the three major groups represented, Icy Strait, Upper Chatham Strait, and Stephens Passage, were all available in Icy Strait over quite comparable periods of time. Stephens Passage races were in evidence from July 25 to August 30, Icy Strait races from July 29 to September 5, and Upper Chatham Strait races from August 1 to September 5.

Recoveries in Frederick Sound, Peril Strait, Tenakee Inlet, and Lynn Canal indicate that these races were available for shorter periods of time. The efforts of our crews and of those of the Fisheries Research Institute were sufficient to give adequate coverage in each section with respect to the corresponding number of spawners. The limited recovery in Tenakee Inlet has been discussed and, as mentioned, this recovery may be related to the time of sampling in Icy Strait or to migration from areas other than Icy Strait.

Inspection of figure 9 suggests the possibility of selecting peak times of passage of the various racial groups in Icy Strait on the basis of numbers recovered in each area. However, since no tagging was conducted during the period August 15 to 26, we have no way of determining the true pattern of availability during this period. Furthermore, a thorough interpretation of racial peaking as depicted in figure 9 should account for such factors as (1) the relation of numbers tagged to the numbers available each day, (2) possible varying degrees of fishing intensity on the various races with respect to time, and (3) varying amounts of recovery effort in the different streams. While it would be possible to consider items 1 and 3, it would be difficult indeed to determine the necessary adjustments involved in item 2. Consequently, we do not feel that our returns alone offer conclusive evidence of the peak time of passage of the racial groups in Icy Strait.

Speed of migration from tagging point to stream

It is difficult to obtain a true measure of the elapsed time involved in the movement of a salmon from the time it was tagged until it entered the stream, since in most instances we have no accurate way of determining when the fish actually entered the stream. One approach to the problem is to calculate the time in days from the date of tagging to the date of recovery, using only recoveries of live fish and making no allowance for the stage of maturity of the fish. Such an analysis was made for the elapsed time from Icy Strait tagging points to the four principal areas of recovery. These times, in days, are as follows:

To—	*Average from Pleasant Island*	*Average from Point Adolphus*	*Range*
Icy Strait	25. 3	25. 5	6 to 41
Tenakee Inlet	25. 4	25. 6	16 to 36
Upper Chatham Strait	28. 8	30. 9	12 to 46
Stephens Passage–Seymour Canal	33. 0	33. 0	8 to 46

These figures are, in all probability, somewhat in excess of the true elapsed times, since it is very unlikely that all of the tagged fish were captured immediately or shortly after their entrance into the various streams. Indeed, if we are to consider the wide area examined for tagged salmon, it is quite possible that many fish spent considerable time on the spawning ground before their capture. The elapsed time, then, is undoubtedly influenced by the date on which the survey was conducted and therefore may not correctly represent the

TABLE 9.—*Combined stream recoveries of pink salmon tagged at Pleasant Island and Point Adolphus, 1950*

Recovered in—	Number recovered from tagging of—												
	July 25 (29 tagged)	July 26 (53 tagged)	July 27 (51 tagged)	July 28 (75 tagged)	July 29 (26 tagged)	July 30 (361 tagged)	July 31 (519 tagged)	Aug. 1 (101 tagged)	Aug. 2 (117 tagged)	Aug. 3 (784 tagged)	Aug. 4 (573 tagged)	Aug. 5 (862 tagged)	Aug. 6 (1,097 tagged)
Icy Strait area:													
Humpback Creek, No. 19					1	3	6	1		6	1	8	9
Game Creek, No. 16						1	2			6	2	5	4
Seagull Creek, No. 17A										1	1	1	3
Port Frederick, No. 17B													
Neka Bay, No. 18							1			1	1		2
Spasski Creek, No. 20						2						2	2
Homeshore, No. 1						1	1			1		2	3
Homeshore, rt. of No. 1												1	1
Chicken Creek, No. 14A													
Idaho Inlet, No. 12												1	
Whitestone Harbor, south stream							1						
Total					1	7	11	1		15	5	20	24
Lynn Canal area:													
Funter Bay, No. 78													
Howard Cove, No. 3A													1
Howard Cove, No. 3													1
Chilkat River												1	
Chilkoot River												1	
Total												2	2
Tenakee Inlet area:													
Kadashan Bay, No. 14				1			1	1		1			
Crab Bay, No. 13A							3			1			
Eaton Creek			1			1	1		1	1			
Seal Bay, No. 11						1	1			2			
Long Bay, No. 10						1							
Total			1	1		3	6	1	1	5			
Upper Chatham Strait area:													
South arm Hood Bay, No. 55										3		1	
North arm Hood Bay, No. 53 or No. 54								1					1
Bear Creek, Hood Bay											1		
Calin Creek, Hood Bay													
Favorite Bay stream													1
Sitkoh Bay, No. 20													
Clear River, Kelp Bay										1			
Chaik Bay, No. 57													
Wilson Cove, No. 60													
Total								1		4	1	1	2
Peril Strait area:													
Saook Bay, No. 35													1
Rodman Creek, No. 33											1		
Patterson Bay, No. 26													
Poison Cove No. 29													
Total											1		1
Frederick Sound area:													
Point McCartney stream													
Pybus Bay, No. 20													
Saginaw Bay, No. 39													
Security Bay, No. 40													
Total													
Stephens Passage area:													
Gambier Bay, No. 17											1		
Half mile north of Gambier Bay, No. 17													
Port Houghton, No. 5	1			1			1			3	5	2	2
Port Houghton, No. 6	1					1							
Hobart Bay, No. 4A													1
Windham Bay, No. 2												3	
Windham Bay, No. 2A										2	1	2	
Mole River, No. 15		1				5	3			6	5	7	6
Windfall Harbor, No. 14										1			
Stream 1½ mi. north No. 14													
Seymour Canal, No. 13		1				1				2			3
Speel River, Port Snettisham						1		1					
Limestone Creek, No. 1					1	2	4	1	1	2	1	1	3
Stream, rt. of Sweetheart Creek													
Lemon Creek, Juneau													
Total	2	2		1	1	10	8	2	1	16	13	15	15
South Chatham Strait area: Lover's Cove stream									1				
Other areas:													
Stikine River										1			
Petersburg Creek, No. 79													1
Snake Creek, No. 42													
Twin Creek, Mitkof Island												1	
Total										1		1	1
Grand total	2 (6.9%)	2 (3.8%)	1 (2.0%)	2 (2.7%)	2 (7.7%)	20 (5.5%)	25 (4.8%)	5 (5.1%)	3 (2.6%)	41 (5.2%)	20 (3.5%)	39 (4.5%)	45 (4.1%)

TABLE 9.—*Combined stream recoveries of pink salmon tagged at Pleasant Island and Point Adolphus, 1950*—Continued

Recovered in—	Number recovered from tagging of—												Total recoveries (15,595 tagged)
	Aug. 7 (1,146 tagged)	Aug. 8 (1,195 tagged)	Aug. 9 (351 tagged)	Aug. 10 (1,509 tagged)	Aug. 11 (1,003 tagged)	Aug. 12 (1,938 tagged)	Aug. 13 (1,661 tagged)	Aug. 14 (1,083 tagged)	Aug. 27 (96 tagged)	Aug. 30 (306 tagged)	Sept. 4 (283 tagged)	Sept. 5 (376 tagged)	
Icy Strait area:													
Humpback Creek, No. 19	10	15	1	7	4	5	2	2					81
Game Creek, No. 16	4	7	2	5	2	5	3	2		7		1	58
Seagull Creek, No. 17A	2	2	1	1	1			1					14
Port Frederick, No. 17B	1												1
Neka Bay, No. 18		2					1						8
Spasski Creek, No. 20	1			2									9
Homeshore, No. 1	3	1	2	3	4	3	2						26
Homeshore, rt. of No. 1	2	1		1	1	1		2					10
Chicken Creek, No. 14A											1		1
Idaho Inlet, No. 12													1
Whitestone Harbor, south stream													1
Total	23	28	6	19	12	14	8	7		7	1	1	210
Lynn Canal area:													
Funter Bay, No. 78					1	1							2
Howard Cove, No. 3A			1					1					3
Howard Cove, No. 3	1			1		1							4
Chilkat River													1
Chilkoot River						2	2						5
Total	1		1	1	1	4	2	1					15
Tenakee Inlet area:													
Kadashan Bay, No. 14	1	1		1									7
Crab Bay, No. 13A													4
Eaton Creek						1							6
Seal Bay, No. 11													4
Long Bay, No. 10													1
Total	1	1		1		1							22
Upper Chatham Strait area:													
South arm Hood Bay, No. 55	3	1		3	1	7	2		1				22
North arm Hood Bay, Nos. 53 or 54		1		1		2	2	1				1	10
Bear Creek, Hood Bay						1	1			1		1	5
Calin Creek, Hood Bay				1									1
Favorite Bay stream	2	3		6	2	3	2	3					22
Sitkoh Bay, No. 20						2			2	1		1	6
Clear River, Kelp Bay				1	1	1	1						5
Chaik Bay, No. 57	1					5	3				1		10
Wilson Cove, No. 60										1			1
Total	6	5		12	4	21	11	4	3	3	1	3	82
Peril Strait area:													
Saook Bay, No. 35													1
Rodman Creek, No. 33	2		1	1	1		2						8
Patterson Bay, No. 26				1		2	1						4
Poison Cove, No. 29				1									1
Total	2		1	3	1	2	3						14
Frederick Sound area:													
Point McCartney stream							1						1
Pybus Bay, No. 20							1						1
Saginaw Bay, No. 39					1	1		3				1	6
Security Bay, No. 40		3			1	1	1			1			7
Total		3			2	2	3	3		1		1	15
Stephens Passage area:													
Gambier Bay, No. 17		1		1	1								4
Half mile north of Gambier Bay, No. 17				2		1	1	1					5
Port Houghton, No. 5	1			3	1	1	1						22
Port Houghton, No. 6													2
Hobart Bay, No. 4A	1			1									3
Windham Bay, No. 2		1		1		2	3	2	1	1			14
Windham Bay, No. 2A	3	1		1			1						11
Mole River, No. 15	9	8		4	1	5	2						62
Windfall Harbor, No. 14													1
Stream 1½ mi. north, No. 14		1			1	2							4
Seymour Canal, No. 13	4	2	1	1	1		1						17
Speel River, Port Snettisham													2
Limestone Creek, No. 1	2	1	1	2	2	2	1						27
Stream, rt. of Sweetheart Creek						1							1
Lemon Creek, Juneau						1							1
Total	20	15	2	16	7	15	10	3	1	1			176
South Chatham strait area:													
Lover's Cove Stream						1	1				1		4
Other areas:													
Stikine River					1								2
Petersburg Creek, No. 79				1									2
Snake Creek No. 42		1											1
Twin Creek, Mitkof Island													1
Total		1		1	1								6
Grand total	53 (4.6%)	53 (4.4%)	10 (2.8%)	53 (3.5%)	28 (2.8%)	60 (3.1%)	38 (2.3%)	18 (1.7%)	4 (4.2%)	12 (3.9%)	3 (1.1%)	5 (1.3%)	544 (3.5%)

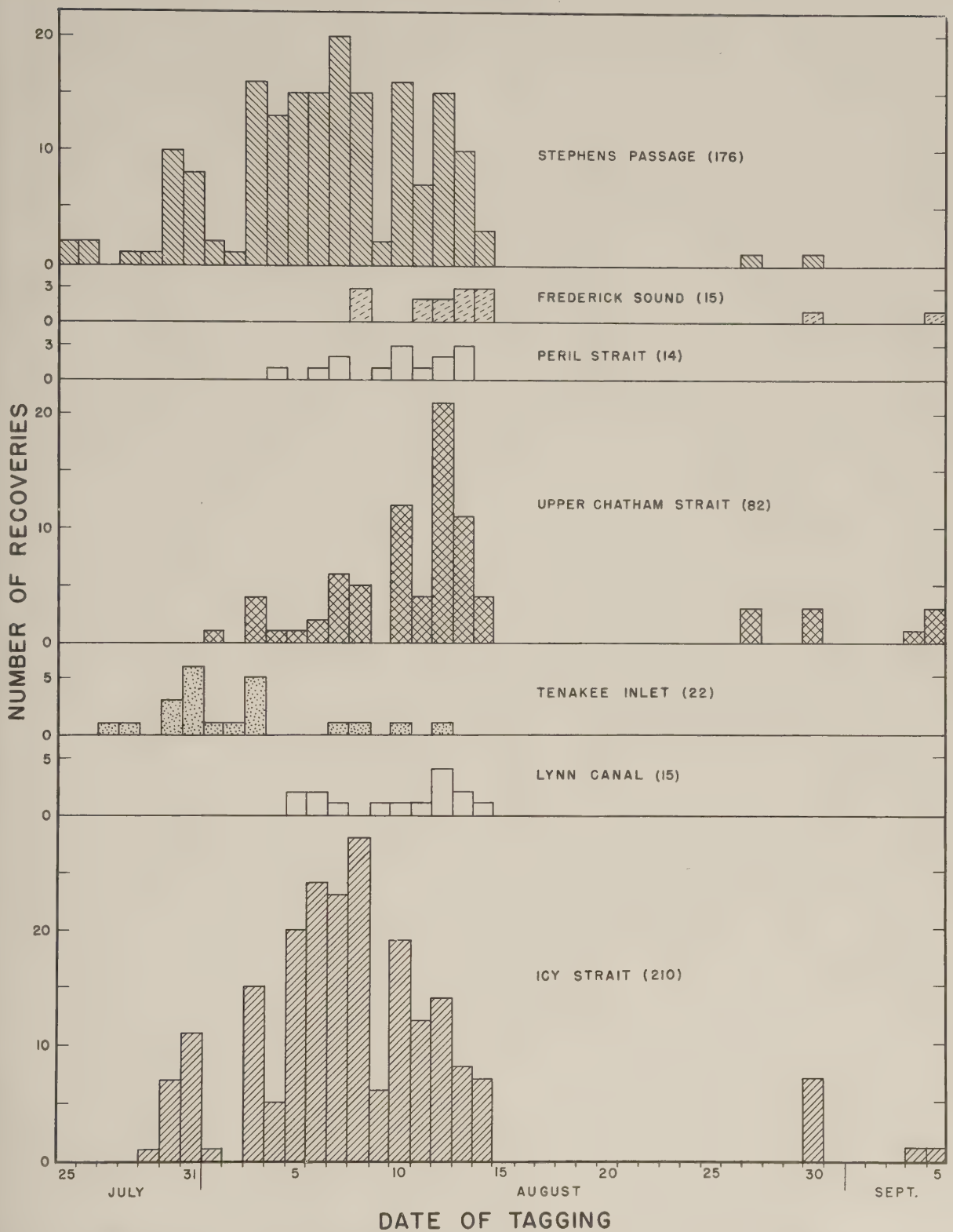

FIGURE 11.—Racial composition of Icy Strait pink salmon run, 1950, as indicated by number of stream recoveries made from each tagging for period July 25 to September 5, inclusive. Numbers in parentheses indicate total stream recovery in each area. No tagging was conducted during period August 15 to 26, inclusive.

actual time taken by the fish to travel between the indicated points.

A particularly interesting indication of variation in rate of migration is found in the comparison of two stream recoveries made in Lover's Cove Stream on southeast Baranof Island. A fish tagged and released in Icy Strait on August 2 arrived on the spawning grounds at approximately the same time as did a fish tagged and released in Icy strait on September 4. These fish were recovered by Service personnel conducting intertidal-zone spawning experiments at Lover's Cove, Big Port Walter. Few pink salmon entered this stream before September 10, and as the grounds were under constant observation throughout the spawning period it is certain that these two recoveries were made within a very short time after the salmon entered the stream.

SUMMARY

A total of 17,400 pink salmon were tagged in Icy Strait and Upper Chatham Strait in the period July 25 to September 5, 1950. Of this number, 6,478, or 37.2 percent, were recovered by the commercial fishery. The highest recovery of a single day's tagging was 64.7 percent, which came from the Pleasant Island tagging of August 14, the day before the fishing season opened. Recoveries of tagged salmon released within the fishing season suggest that fishing mortality on these fish probably remained above 50 percent throughout most of season, dropping below this only during the last week.

Commercial recovery by principal tagging points was as follows:

Tagged at—	*Number tagged*	*Number recovered*	*Percent recovered*
Pleasant Island	8, 278	2, 966	35. 8
Point Adolphus	7, 317	2, 738	37. 4
Cube Point	1, 758	760	43. 2
False Bay	47	10	21. 3
Unknown (tags broken)		4	
All points	[1] 17, 400	6, 478	37. 2

[1] Does not include tagged fish captured at original point of tagging.

Pink salmon tagged in Icy Strait were found to migrate east through Icy Strait and south into Chatham Strait, and then east and north into Frederick Sound and Stephens Passage. Smaller segments of the main run branched into Lynn Canal and South Chatham Strait. There was little movement to western areas of Chichagof Island. Returns from the daily tagging in Icy Strait showed that recoveries increased at the rate of 3.6 percent a day as the day of tagging approached the opening day of the commercial season. While tagging within the fishing period was limited to four experiments during the latter part of the season, the returns indicate a progressive decline as the date of tagging approaches the closing date of fishing. No significant differences were noted in the returns from the tagging at Point Adolphus and those from the tagging at Pleasant Island.

Recoveries from the tagging in Upper Chatham Strait indicate a major southward movement through Chatham Strait and then eastward into Frederick Sound and Stephens Passage. There is also evidence of a smaller but significant northward migration.

A total of 616 tags, or 5.6 percent, of the 10,922 tags not recovered commercially, were recovered in 61 streams. Approximately 125 streams north of 56° 30′ in Southeastern Alaska were examined for tagged salmon. Stream recoveries from each point of tagging were as follows:

Tagged at—	*Number tagged*	*Number recovered*	*Percent recovered*
Pleasant Island	8, 278	281	3. 4
Point Adolphus	7, 317	263	3. 6
Upper Chatham Strait	1, 805	72	4. 0
All points	17, 400	616	3. 5

Stream recoveries illustrate very clearly the great mixing of races which occurs on the commercial fishing ground. For example, from the 1,110 individuals tagged at Point Adolphus on August 10, recoveries were made in 22 streams. Analysis of stream returns indicated that there was very little difference in the length of time the major racial groups were present in Icy Strait: Stephens Passage races were found to be present from July 25 to August 30, Icy Strait races from July 29 to September 5, and Chatham Strait races from August 1 to September 5.

While some tag recoveries were made in Tenakee Inlet, there are indications that either the tagging did not adequately sample this run or the main part of it reached Tenakee Inlet through areas other than Icy Strait.

Stream recoveries from the tagging in Upper Chatham Strait indicate that the majority of these fish were bound for streams in Chatham Strait and Stephens Passage. The average rate of migration from point of tagging to the streams was not readily determined, although evidence of considerable variability in rate of movement was obtained.

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APPENDIX

Complete lists of stream recoveries by point of release are included in tables 10, 11, and 12. Personnel of the Fish and Wildlife Service and Fisheries Research Institute made approximately 70 percent of these recoveries, while local residents and others accounted for the remaining 30 percent.

TABLE 10.—*Stream recoveries of pink salmon tagged at Pleasant Island, 1950*

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Eaton Creek, Tenakee Inlet	7/27	9/1	x		36
Long Bay, No. 10	7/30	8/26	x		27
Mole River, No. 15	7/30	9/10	x		42
Game Creek, No. 16	7/30	8/27	x		28
Port Houghton, No. 6	7/30	8/20	x		21
Limestone Inlet, No. 1	7/30	8/23	x		24
Speel River, Port Snettisham	7/30	8/9	x		10
Homeshore, No. 1	7/30	9/5	x		38
Limestone Inlet, No. 1	7/30	9/11	x		43
Spasski Creek, No. 20	7/30	8/29	x		30
Mole River, No. 15	7/30	9/9	x		41
Do	7/30	9/9	x		41
Do	7/30	9/9	x		41
Do	7/30	9/9	x		41
Seymour Canal, No. 13	7/30	9/10	x		42
Eaton Creek, Tenakee Inlet	7/30	9/1	x		33
Humpback Creek, No. 19	7/30	8/31	x		32
Do	7/30	9/3	x		35
Do	7/30	9/4	x		36
Seal Bay, No. 11	7/30	9/3	x		35
Spasski Creek, No. 20	7/30	8/19	x		20
Seal Bay, No. 11	7/31	8/24	x		24
Kadashan Bay, No. 14 Creek	7/31	8/27	x		27
Mole River, No. 15	7/31	9/10	x		41
Game Creek, No. 16	7/31	9/7	x		38
Do	7/31	8/31	x		31
Limestone Inlet, No. 1	7/31	8/23	x		23
Do	7/31	8/23	x		23
Neka Bay stream, No. 18	7/31	9/1	x		32
Homeshore stream, No. 1	7/31	9/2	x		33
Limestone Creek, No. 1	7/31	9/11	x		42
Do	7/31	9/11	x		42
Port Houghton, No. 5	7/31	9/14		x	45
Whitestone Harbor, No. 22	7/31	8/29	x		29
Mole River, No. 15	7/31	9/9	x		40
Do	7/31	9/9	x		40
Crab Bay, No. 13A	7/31	8/16	x		16
Do	7/31	8/16	x		16
Do	7/31	8/16	x		16
Eaton Creek, Tenakee Inlet	7/31	9/1	x		32
Humpback Creek, No. 19	7/31	8/20		x	20
Do	7/31	8/20		x	20
Do	7/31	8/24	x		24
Do	7/31	8/26	x		26
Do	7/31	8/26	x		26
Do	7/31	9/14		x	45
Kadashan Bay Creek, No. 14	8/1	8/27	x		26
Limestone Inlet, No. 1	8/1	8/23	x		22
Speel River, Port Snettisham	8/1	8/9	x		8
Hood Bay Nos. 53 or 54	8/1	9/16	x		46
Humpback Creek, No. 19	8/1	8/27	x		26
Limestone Inlet, No. 1	8/2	9/11	x		40
Eaton Creek, Tenakee Inlet	8/2	9/1	x		30
Mole River, No. 15	8/3	9/10	x		38
Do	8/3	9/10	x		38
Game Creek, No. 16	8/3	9/5	x		33
Limestone Inlet Creek, No. 1	8/3	8/23	x		20
Hood Bay, No. 55	8/3	9/17	x		45
Humpback Creek, No. 19	8/3	8/12	x		9
Seagull Creek, No. 17A	8/3	8/31	x		28
Neka Bay, No. 18 Stream	8/3	8/31	x		28
Windham Bay, opposite No. 2	8/3	9/12	x		40
Port Houghton, No. 5	8/3	9/14	x		42
Game Creek, No. 16	8/3	8/22	x		19
Humpback Creek, No. 19	8/3	9/3	x		31
Mole River, No. 15	8/4	9/10	x		37
Port Houghton, No. 5	8/4	9/14		x	41
Do	8/4	9/14	x		41
Do	8/4	9/14	x		41
Mole River, No. 15	8/4	9/9	x		36
Spasski Creek, No. 20	8/5	9/2	x		28
Chilkoot River	8/5	9/21	x		50
Twin Creek, Mitkof Isl., Wrangell Narrows	8/5	9/10		x	36
Mole River, No. 15	8/5	9/10	x		36
Do	8/5	9/10	x		36
Do	8/5	9/12	x		38
Do	8/5	9/13	x		39
Game Creek, No. 19	8/5	9/4	x		30
Do	8/5	9/4	x		30
Do	8/5	9/5	x		31
Do	8/5	9/4	x		30
Sophia Creek, Windham Bay, No. 2	8/5	8/21	x		16
Idaho Inlet, No. 12	8/5	9/6	x		32
Seagull Creek, No. 17A	8/5	9/1	x		27
Homeshore Stream, No. 1	8/5	9/2	x		28
Stream to rt. of Homeshore No. 1	8/5	9/2	x		28
Homeshore stream, No. 1	8/5	9/5	x		31
Windham Bay stream, No. 2	8/5	9/12		x	38
Do	8/5	9/12		x	38

TABLE 10.—*Stream recoveries of pink salmon tagged at Pleasant Island, 1950*—Continued

See footnotes at end of table.

TABLE 10.—*Stream recoveries of pink salmon tagged at Pleasant Island, 1950*—Continued

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Stream opposite No. 2, Windham Bay	8/5	9/12	x		38
Port Houghton, No. 5	8/5	9/13		x	39
Do	8/5	9/14		x	40
Mole River, No. 15	8/5	9/9	x		35
Do	8/5	9/9	x		35
Game Creek, No. 16	8/5	8/22	x		17
Humpback Creek, No. 19	8/5	8/28		x	23
Do	8/5	8/30	x		25
Do	8/5	9/1		x	27
Do	8/5	9/3	x		29
Do	8/5	9/4		x	30
Do	8/5	9/13		x	39
Chilkat River	8/5	8/29	x		24
Spasski Creek, No. 20	8/6	9/2	x		27
Paradise Flats Creek, Saook, No. 35	8/6	8/28	x		22
Mole River, No. 15	8/6	9/18	x		43
N. arm Hood Bay, Nos. 53–54	8/6	9/7	x		32
Favorite Bay stream	8/6	9/10	x		35
Game Creek, No. 16	8/6	8/31	x		25
Neka Bay, No. 18	8/6	9/3	x		28
Homeshore stream, No. 1	8/6	9/2	x		27
Homeshore, stream right of No. 1	8/6	9/2	x		27
Limestone Creek, No. 1	8/6	9/11	x		36
Do	8/6	9/11	x		36
Hobart Bay, No. 4A	8/6	9/13	x		38
Port Houghton, No. 5	8/6	9/14		x	39
Do	8/6	9/14		x	39
Spasski Creek, No. 20	8/6	8/29	x		23
Howard Cove Creek, No. 3	8/6	9/5	x		30
Mole River, No. 15	8/6	9/9	x		34
Seymour Canal, No. 13	8/6	9/10	x		35
Do	8/6	9/10	x		35
Humpback Creek, No. 19	8/6	8/26	x		20
Do	8/6	8/26	x		20
Do	8/6	8/30	x		24
Do	8/6	8/30	x		24
Do	8/6	9/5		x	30
Mole River, No. 15	8/7	9/10	x		34
Do	8/7	9/11	x		35
Do	8/7	9/11	x		35
Do	8/7	9/11	x		35
Favorite Bay stream	8/7	9/10	x		34
Game Creek, No. 16	8/7	9/4	x		28
Do	8/7	8/16	x		9
S. arm Hood Bay, No. 55	8/7	9/7	x		31
Do	8/7	9/10	x		34
Do	8/7	9/17	x		41
Port Frederick, No. 17B	8/7	8/31	x		24
Seagull Creek, No. 17A	8/7	8/31	x		24
Do	8/7	8/31	x		24
Homeshore stream, No. 1	8/7	9/2	x		26
Do	8/7	9/2	x		26
Homeshore, stream to right of No. 1	8/7	9/2	x		26
Homeshore, No. 1	8/7	9/5	x		29
Limestone Inlet, No. 1	8/7	9/11	x		35
Do	8/7	9/11	x		35
Stream opp. Windham Bay, No. 2	8/7	9/12	x		36
Do	8/7	9/12	x		36
Hobart Bay, No. 4A	8/7	9/13	x		37
Port Houghton, No. 5	8/7	9/14		x	38
Spasski Creek, No. 20	8/7	8/29	x		22
Howard Cove, No. 3	8/7	9/5	x		29
Mole River, No. 15	8/7	9/9	x		33
Do	8/7	9/9	x		33
Do	8/7	9/9		x	33
Seymour Canal, No. 13	8/7	9/10	x		34
Do	8/7	9/10	x		34
Do	8/7	9/10	x		34
Do	8/7	9/10	x		34
Humpback Creek, No. 19	8/7	8/29		x	22
Do	8/7	8/30	x		23
Do	8/7	9/5		x	29
Do	8/7	9/7		x	31
Do	8/7	9/7		x	31
Favorite Bay stream	8/7	9/12		x	36
Mole River, No. 15	8/8	9/10	x		33
Do	8/8	9/12	x		35
Game Creek, No. 16	8/8	8/31	x		23
Etolin Island, Snake Creek	8/8	8/26	x		18
Seymour Canal, No. 13	8/8	9/10	x		33
Do	8/8	9/10	x		33
Humpback Creek, No. 19	8/8	8/26	x		18
Do	8/8	8/28		x	20
Do	8/8	9/13		x	36

TABLE 10.—*Stream recoveries of pink salmon tagged at Pleasant Island, 1950*—Continued

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Rodman Bay, No. 33	8/9	9/16	x		38
Seagull Creek, No. 17A	8/9	9/1	x		23
Homeshore stream, No. 1	8/9	9/2	x		24
Do	8/9	9/5	x		27
Stream No. 3A, Port Howard	8/9	9/6	x		28
Kadashan Bay Creek, No. 14	8/10	8/27	x		17
Petersburg Creek	8/10	9/10	x		31
Mole River, No. 15	8/10	9/12	x		33
Favorite Bay stream	8/10	9/10	x		31
Game Creek, No. 16	8/10	9/5	x		26
Do	8/10	9/15	x		36
Seagull Creek, No. 17A	8/10	8/31	x		21
Patterson Bay, No. 26	8/10	9/16	x		37
Humpback Creek, No. 19	8/10	8/28		x	18
Do	8/10	9/4		x	25
Favorite Bay stream	8/10	9/12		x	33
Game Creek, No. 19	8/11	9/8		x	28
Do	8/11	9/7		x	27
Security Bay, No. 40	8/11	9/18		x	38
Saginaw Bay, No. 39	8/11	9/19	x		39
Homeshore stream to right of No. 1	8/11	9/2	x		22
Homeshore stream, No. 1	8/11	9/5	x		25
Funter Bay, No. 78	8/11	9/6	x		26
Humpback Creek, No. 19	8/11	8/30	x		19
Do	8/11	9/13		x	33
Mole River, No. 15	8/12	9/11	x		30
Do	8/12	9/11	x		30
Do	8/12	9/12	x		31
Do	8/12	9/12	x		31
Game Creek, No. 16	8/12	9/12	x		31
Do	8/12	9/9	x		28
Do	8/12	9/5	x		24
Do	8/12	9/5	x		24
Do	8/12	9/15	x		34
Lemon Creek, Juneau	8/12	9/9	x		28
Security Bay, No. 40	8/12	9/18	x		37
N. arm Hood Bay, Nos. 53–54	8/12	9/8	x		27
Hood Bay, No. 55	8/12	9/11	x		30
Clear River, Kelp Bay	8/12	9/9	x		28
Homeshore stream, No. 1	8/12	9/2	x		21
Stream right of Homeshore, No. 1	8/12	9/2	x		21
Homeshore stream, No. 1	8/12	9/5	x		24
Funter Bay, stream No. 78	8/12	9/6	x		25
Limestone Creek, No. 1	8/12	9/11	x		30
Windham Bay, No. 2	8/12	9/12	x		31
Patterson Bay, No. 26	8/12	9/16	x		35
Howard Cove Creek, No. 3	8/12	9/5	x		24
Windfall Harbor, 1½ Mi. N. of No. 14	8/12	9/10	x		29
Gambier Bay, ½ mile N. of No. 17	8/12	9/11	x		30
Eaton Creek, Tenakee Inlet	8/12	9/1	x		20
Humpback Creek, No. 19	8/12	8/27	x		15
Do	8/12	9/4		x	23
Do	8/12	9/7		x	26
Favorite Bay stream	8/12	9/12		x	31
Chaik Bay Stream, No. 57	8/12	9/10	x		29
Do	8/13	9/10	x		28
Do	8/13	9/10	x		28
Favorite Bay stream	8/13	9/10	x		28
Game Creek, No. 16	8/13	9/15	x		33
Do	8/13	9/15	x		33
Security Bay, No. 40	8/13	9/18	x		36
Hood Bay, No. 55	8/13	9/11	x		29
Do	8/13	9/17	x		35
Clear River, Kelp Bay	8/13	9/9	x		27
Rodman Bay, No. 33	8/13	9/16	x		34
Neka Bay, No. 18	8/13	9/3	x		21
Point McCartney stream	8/13	9/3	x		21
Windham Bay, No. 2	8/13	9/12	x		30
Do	8/13	9/12	x		30
Stream opp. No. 2, Windham Bay	8/13	9/12	x		30
Port Houghton, No. 5	8/13	9/14	x		32
Seymour Canal, No. 13	8/13	9/10	x		28
Pybus Bay, No. 20	8/13	9/12	x		30
Chaik Bay, No. 57	8/13	9/17	x		35
Humpback Creek, No. 19	8/13	9/1		x	19
Chilkoot River	8/13	10/1		x	49
Lover's Cove stream	8/13	9/13	x		31
Favorite Bay stream	8/13	9/12		x	30
Game Creek, No. 16	8/14	9/4	x		21
Do	8/14	9/15	x		32

See footnotes at end of table.

TABLE 10.—*Stream recoveries of pink salmon tagged at Pleasant Island, 1950*—Continued

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Saginaw Bay, No. 39	8/14	9/19	x		36
Stream to rt. of No. 1, Homeshore	8/14	9/5	x		22
Stream No. 3A, Point Howard	8/14	9/6	x		23
Windham Bay, No. 2	8/14	9/12	x		29
Saginaw Bay, main stream	8/14	9/18	x		35
Humpback Creek, No. 19	8/14	9/4		x	21
Do	8/14	9/7		x	24
Windham Bay, No. 2	8/27	9/12	x		16
Sitkoh Bay, No. 20	8/27	9/18	x		22
Do	8/27	9/18	x		22
Hood Bay, No. 55	8/27	10/10		x	44
Game Creek, No. 16	8/30	9/9	x		10
Do	8/30	9/9	x		10
Do	8/30	9/9	x		10
Do	8/30	9/9	x		10
Do	8/30	9/12	x		13
Do	8/30	9/12	x		13
Do	8/30	9/5	x		6
Security Bay, No. 40	8/30	9/18	x		19
Wilson Cove, No. 60	8/30	9/10	x		11
Windham Bay, No. 2	8/30	9/12	x		13
Sitkoh Bay, No. 20	8/30	9/18	x		19
Bear Creek, Hood Bay	8/30	Oct.		x	
Game Creek, No. 16	9/5	9/15	x		10
Saginaw Bay, No. 39	9/5	9/19	x		14
Hood Bay, No. 55	9/5	9/17	x		12
Sitkoh Bay, No. 20	9/5	9/18	x		13
Bear Creek, Hood Bay	9/5	Oct.		x	
All streams			237	44	

[1] Condition of fish at time of recovery.
[2] From date of release to date of capture.

TABLE 11.—*Stream recoveries of pink salmon tagged at Point Adolphus, 1950*

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Port Houghton, No. 6	7/25	8/20	x		26
Port Houghton, No. 5	7/25	9/13		x	50
Mole River, No. 15	7/26	8/25	x		30
Seymour Canal, No. 13	7/26	9/10	x		46
Port Houghton, No. 5	7/28	8/20	x		23
Kadashan Bay, No. 14	7/28	8/31	x		34
Limestone Creek, No. 1	7/29	8/23	x		25
Humpback Creek, No. 19	7/29	8/20		x	22
Lover's Cove stream	8/2	9/20	x		49
Seal Bay, No. 11	8/3	8/24	x		21
Do	8/3	9/3	x		31
Mole River, No. 15	8/3	9/10	x		38
Do	8/3	9/10	x		38
Do	8/3	9/10	x		38
Do	8/3	9/9	x		37
Game Creek, No. 16	8/3	9/5	x		33
Do	8/3	9/5	x		33
Do	8/3	8/30	x		27
Do	8/3	8/31	x		28
S. arm Hood Bay, No. 55	8/3	9/7	x		35
Do	8/3	9/10	x		38
Clear River, No. 41	8/3	9/9	x		37
Homeshore, No. 1	8/3	9/5	x		33
Stikine River	8/3	8/19	x		16
Limestone Creek, No. 1	8/3	9/11		x	39
Windham Bay, opp. No. 2	8/3	9/12	x		40
Port Houghton, No. 5	8/3	9/13		x	41
Do	8/3	9/14	x		42
Kadashan Bay, No. 14	8/3	8/31	x		28
Windfall Harbor, No. 14	8/3	9/9	x		37
Seymour Canal, No. 13	8/3	9/10	x		38
Do	8/3	9/10	x		38
Crab Bay, No. 13A	8/3	8/22	x		19
Eaton Creek, Tenakee	8/3	9/1	x		29
Humpback Creek, No. 19	8/3	8/24	x		21
Do	8/3	8/30	x		27
Do	8/3	9/3	x		31
Do	8/3	9/5		x	33

TABLE 11.—*Stream recoveries of pink salmon tagged at Point Adolphus, 1950*—Continued

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Mole River, No. 15	8/4	9/10	x		37
Do	8/4	9/10	x		37
Do	8/4	9/10	x		37
Game Creek, No. 16	8/4	8/31		x	27
Do	8/4	9/4	x		31
Rodman Bay, No. 33	8/4	9/8	x		35
Neka Bay, No. 18	8/4	9/3	x		30
Seagull Creek, No. 17A	8/4	8/31	x		27
Limestone Creek, No. 1	8/4	9/11	x		38
Windham Bay, Opp. No. 2	8/4	9/12	x		39
Port Houghton, No. 5	8/4	9/13		x	40
Do	8/4	9/14		x	41
Gambier Bay, No. 17	8/4	9/11	x		38
Bear Creek, Hood Bay	8/4	Oct.		x	
Humpback Creek, No. 19	8/4	8/26	x		22
Do	8/5	9/2	x		28
Hood Bay, No. 55	8/5	9/10	x		36
Limestone Creek, No. 1	8/5	9/11		x	37
Windham Bay, opp. No. 2	8/5	9/12		x	38
Spasski Creek, No. 20	8/5	8/29	x		24
Mole River, No. 15	8/5	9/9	x		35
Humpback Creek, No. 19	8/5	9/5		x	31
Petersburg Creek	8/6	9/17		x	42
Mole River, No. 15	8/6	9/10	x		35
Do	8/6	9/10	x		35
Do	8/6	9/10	x		35
Do	8/6	9/10	x		35
Game Creek, No. 16	8/6	9/4	x		29
Do	8/6	8/30	x		24
Seagull Creek, No. 17A	8/6	8/31	x		25
Do	8/6	8/31	x		25
Do	8/6	9/1	x		26
Neka Bay, No. 18	8/6	8/31	x		25
Homeshore, No. 1	8/6	9/5	x		30
Do	8/6	9/5	x		30
Point Howard, No. 3A	8/6	9/6	x		31
Limestone Creek, No. 1	8/6	9/11	x		36
Seymour Canal, No. 13	8/6	9/10	x		35
Game Creek, No. 16	8/6	9/3	x		28
Humpback Creek, No. 19	8/6	8/27	x		21
Do	8/6	8/31	x		25
Do	8/6	9/7		x	32
Do	8/6	9/13		x	38
Kadashan Bay, No. 14	8/7	8/27	x		20
Mole River, No. 15	8/7	9/10	x		34
Do	8/7	9/11	x		35
Humpback Creek, No. 19	8/7	9/10	x		34
Game Creek, No. 16	8/7	9/4	x		28
Do	8/7	9/4	x		28
Stream right of No. 1, Homeshore	8/7	9/2	x		26
Windham Bay, opposite No. 2	8/7	9/12	x		36
Rodman Bay, No. 33	8/7	9/17	x		41
Do	8/7	9/16	x		40
Chaik Bay, No. 57	8/7	9/17	x		41
Humpback Creek, No. 19	8/7	8/28		x	21
Do	8/7	8/31	x		24
Do	8/7	9/3	x		27
Do	8/7	9/13		x	37
N. arm Hood Bay, Nos. 53–54	8/8	9/17		x	40
Mole River, No. 15	8/8	9/10	x		33
Do	8/8	9/10	x		33
Do	8/8	9/10	x		33
Do	8/8	9/10	x		33
Do	8/8	9/9	x		32
Do	8/8	9/9	x		32
Favorite Bay stream	8/8	9/10	x		33
Do	8/8	9/10	x		33
Do	8/8	9/10	x		33
Game Creek, No. 16	8/8	9/4	x		27
Do	8/8	8/30	x		22
Do	8/8	8/30	x		22
Do	8/8	8/30	x		22
Do	8/8	9/5	x		28
Do	8/8	9/4	x		27
Security Bay, No. 40	8/8	9/18	x		41
Do	8/8	9/18	x		41
Do	8/8	9/18	x		41
S. arm Hood Bay, No. 55	8/8	9/7	x		30
Neka Bay, No. 18	8/8	9/3	x		26
Do	8/8	9/3	x		26
Seagull Creek, No. 17A	8/8	8/31	x		23
Do	8/8	8/31	x		23
Homeshore, No. 1	8/8	9/2	x		25
Stream right of Homeshore No. 1	8/8	9/2	x		25

See footnotes at end of table.

TABLE 11.—*Stream recoveries of pink salmon tagged at Point Adolphus, 1950*—Continued

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Limestone Creek, No. 1	8/8	9/11		x	34
Windham Bay, No. 2	8/8	9/12	x		35
Windham Bay, opposite No. 2	8/8	9/12	x		35
Kadashan Bay, No. 14	8/8	8/31	x		23
Windfall Harbor, 1½ Mi. N. No. 14	8/8	9/10	x		33
Gambier Bay, No. 17	8/8	9/1	x		34
Humpback Creek, No. 19	8/8	8/28		x	20
Do	8/8	8/28		x	20
Do	8/8	8/28		x	20
Do	8/8	8/29		x	21
Do	8/8	8/29		x	21
Do	8/8	8/30	x		22
Do	8/8	9/2		x	25
Do	8/8	9/3	x		26
Do	8/8	9/7		x	30
Do	8/8	9/13		x	36
Do	8/8	9/13		x	36
Do	8/8	9/13		x	36
Game Creek, No. 16	8/9	9/7	x		29
Do	8/9	9/4	x		26
Limestone Creek, No. 1	8/9	9/11		x	33
Seymour Canal, No. 13	8/9	9/10	x		32
Humpback Creek, No. 19	8/9	8/30	x		21
Gambier Bay, ½ mi. N. No. 17	8/10	9/11	x		32
Do	8/10	9/11	x		32
Spasski Creek, No. 20	8/10	9/2	x		23
Mole River, No. 15	8/10	9/9	x		30
Do	8/10	9/9	x		30
Do	8/10	9/11	x		32
Favorite Bay stream	8/10	9/10	x		31
Do	8/10	9/10	x		31
Do	8/10	9/11	x		32
Do	8/10	9/12	x		33
Game Creek, No. 16	8/10	9/9	x		30
Do	8/10	9/4	x		25
Do	8/10	8/31	x		21
Poison Cove, Peril Strait	8/10	9/14	x		35
S. arm Hood Bay, No. 55	8/10	9/7	x		28
Do	8/10	9/7	x		28
Do	8/10	9/7	x		28
N. arm Hood Bay, Nos. 53–54	8/10	9/8	x		29
Clear River, Kelp Bay	8/10	9/9	x		30
Stream right of Homeshore, No. 1	8/10	9/2	x		23
Homeshore, No. 1	8/10	9/5	x		26
Do	8/10	9/5	x		26
Do	8/10	9/5	x		26
Limestone Creek, No. 1	8/10	9/11	x		32
Do	8/10	9/11	x		32
Windham Bay, No. 2	8/10	9/12	x		33
Windham Bay, opp. No. 2	8/10	9/12	x		33
Hobart Bay, No. 4A	8/10	9/13	x		34
Port Houghton, No. 5	8/10	9/13		x	34
Do	8/10	9/14	x		35
Do	8/10	9/14	x		35
Rodman Bay, No. 33	8/10	9/17	x		38
Spasski Creek, No. 20	8/10	8/29	x		19
Howard Cove, No. 3	8/10	9/5	x		26
Seymour Canal, No. 13	8/10	9/10	x		31
Gambier Bay, No. 17	8/10	9/11	x		31
Humpback Creek, No. 19	8/10	8/30	x		20
Do	8/10	8/30	x		20
Do	8/10	9/5		x	26
Do	8/10	9/13		x	34
Do	8/10	9/13		x	34
Calin Creek, Hood Bay	8/10	Oct.		x	
Mole River, No. 15	8/11	9/10	x		30
S. arm Hood Bay, No. 55	8/11	9/10	x		30
Clear River, Kelp Bay	8/11	9/9	x		29
Seagull Creek, No. 17A	8/11	8/31	x		20
Homeshore, No. 1	8/11	9/2	x		22
Do	8/11	9/2	x		22
Do	8/11	9/5	x		25
Limestone Creek, No. 1	8/11	9/11	x		31
Do	8/11	9/11	x		31

TABLE 11.—*Stream recoveries of pink salmon tagged at Point Adolphus, 1950*—Continued

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Port Houghton, No. 5	8/11	9/14		x	34
Rodman Bay, No. 33	8/11	9/17	x		37
Windfall Harbor 1½ mi. N. No. 14	8/11	9/10	x		30
Seymour Canal, No. 13	8/11	9/10	x		30
Gambier Bay, No. 17	8/11	9/11	x		31
Humpback Creek, No. 19	8/11	8/28		x	17
Do	8/11	8/31	x		20
Stikine River	8/11	8/25	x		14
Favorite Bay stream	8/11	9/11		x	31
Do	8/11	9/12		x	32
Chaik Bay, No. 57	8/12	9/10	x		29
Do	8/12	9/10	x		29
Do	8/12	9/17	x		36
Do	8/12	9/17	x		36
Favorite Bay stream	8/12	9/10	x		29
Do	8/12	9/12		x	31
Gilbert Bay, Str. to Rt. of Sweetheart L. Cr	8/12	8/23	x		11
Saginaw Bay, No. 39	8/12	9/19	x		38
N. Arm Hood Bay, Nos. 53 or 54	8/12	9/8	x		27
S. arm Hood Bay, No. 55	8/12	9/10	x		29
Do	8/12	9/7	x		26
Do	8/12	9/10	x		29
Do	8/12	9/10	x		29
Do	8/12	9/10	x		29
Do	8/12	9/24	x		43
Homeshore, No. 1	8/12	9/2	x		21
Limestone Creek, No. 1	8/12	9/11	x		30
Windham Bay, No. 2	8/12	9/12	x		31
Port Houghton, No. 5	8/12	9/14		x	33
Patterson Bay, No. 26	8/12	9/16	x		35
Sitkoh Bay, No. 20	8/12	9/18	x		37
Do	8/12	9/18	x		37
Mole River, No. 15	8/12	9/9	x		28
Windfall Harbor, 1½ mi. N. No. 14	8/12	9/10	x		29
Humpback Creek, No. 19	8/12	8/27		x	15
Do	8/12	9/7		x	26
Chilkoot River	8/12	10/1		x	50
Do	8/12	10/1		x	50
Lover's Cove stream	8/12	9/20	x		39
Bear Creek, Hood Bay	8/12	Oct.		x	
Mole River, No. 15	8/13	9/12	x		30
Do	8/13	9/12	x		30
Game Creek, No. 16	8/13	9/23	x		41
S. arm Hood Bay, No. 55	8/13	9/7	x		25
N. arm Hood Bay, Nos. 53 or 54	8/13	9/8	x		26
Rodman Bay, No. 33	8/13	9/16	x		34
Homeshore, No. 1	8/13	9/5		x	23
Do	8/13	9/5		x	23
Limestone Creek, No. 1	8/13	9/11	x		29
Windham Bay, No. 2	8/13	9/12	x		30
Patterson Bay, No. 26	8/13	9/16	x		34
Gambier Bay, ½ Mi. N. No. 17	8/13	9/11	x		29
Humpback Creek, No. 19	8/13	9/14		x	32
Chilkoot River	8/13	10/1		x	49
Bear Creek, Hood Bay	8/13	Oct.		x	
N. arm Hood Bay, Nos. 53–54	8/14	9/10		x	27
Saginaw Bay, No. 39	8/14	9/19	x		36
Seagull Creek, No. 17A	8/14	9/1	x		18
Homeshore, right of No. 1	8/14	9/2	x		19
Windham Bay, No. 2	8/14	9/12	x		29
Gambier Bay, ½ mi. N. No. 17	8/14	9/11	x		28
Favorite Bay stream	8/14	9/12		x	29
Do	8/14	9/11		x	28
Do	8/14	9/11		x	28
Chicken Creek No. 14A	9/4	9/14	x		10
Lover's Cove stream	9/4	9/16	x		12
Chaik Bay, No. 57	9/4	9/17	x		13
All streams			208	55	

[1] Condition of fish at time of recovery.
[2] From date of release to date of recovery.

TABLE 12.—*Stream recoveries of pink salmon tagged at Cube Point, 1950*

Stream name and FWS number	Date tagged	Date recovered	Condition [1]		Elapsed time [2]
			Alive	Dead	
					Days
Mole River, No. 15	8/20	9/11	x		22
Do	8/20	9/11	x		22
Do	8/20	9/11	x		22
Chaik Bay, No. 57	8/20	9/10	x		21
Do	8/20	9/10	x		21
Do	8/20	9/10	x		21
Do